School-based group interpersonal therapy for adolescents with depression in Nepal: a pilot realist cluster-randomised controlled trial

Study protocol

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Revision History

Document ID - (Title) revision X.Y	Description of changes from previous revision	Effective Date
2.2	• Revision to adolescent recruitment policy • Revised caregiver sample from 100% to ~30% subsample of participating adolescents • Three strata rather than two	
2.3	• Edit to progression criteria language – addition of the word eligible [“Percentage of eligible adolescents with informed consent at baseline”] • Amendment to inclusion criteria – changed from >=10 to >=11 based on validation study findings • To avoid ceiling effects we increased time period over which we record attendance from 12 to 18 days. Revised outcome is: “Number of days attended in the 12 school days prior to the baseline (excluding school closures and Saturdays).	

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Background

Depression affects over 264 million people worldwide, is a leading cause of disability and has profound negative consequences for the global economy [1]. When depression presents in adolescence, it can have devastating and long-lasting effects on health and development [2]. Access to effective treatment is limited, especially in low- and middle-income countries (LMICs) where 90% of the world's adolescents live [3]. Researchers have tried to expand access to treatment in these settings by culturally and contextually adapting existing psychological interventions. Whilst this approach is promising, results from evaluations have been mixed; interventions shown to work in one setting are not always successful elsewhere [4]. The major reason for failures in intervention transfer is that we don't know enough about how interventions work and how this is affected by context in terms of setting and population characteristics. This is a major challenge to the provision of effective mental health care across the world.

Psychological interventions

Psychological interventions are treatments that seek to change behaviours, cognitions and feelings in order to improve mental health. Meta-analyses report medium-to-large effect sizes associated with psychological interventions for depression among children and adolescents but limited evidence from LMICs [5, 6]. We have little knowledge about how psychological interventions work. Correlational analyses from high-income settings suggest there may be common therapeutic factors, i.e. general elements common to all types of psychological intervention including communication skills, empathy and collaboration, as well as specific treatment factors related to individual therapies [7]. Few studies have examined how these factors bring about change. Even fewer have tried to understand how participant characteristics and other contextual factors affect treatment outcomes. This is important because effect sizes of treatments for depression have not increased in recent decades, individual responses are variable and uptake is low. Knowing how psychological interventions work could inform the development of interventions focused on mechanisms that are more effective, efficient and acceptable, as well as the adaptation of interventions across different settings and populations [7].

Interpersonal therapy (IPT)

IPT is a psychological intervention that focuses on four common problems that trigger depression: grief, disputes, role transitions and social isolation [8]. Using techniques and strategies such as linking mood to event and event to mood, role play and skill-building, IPT

encourages the individual to analyse and improve their interpersonal relationships. IPT was developed in the USA to treat depressed adults but it has also been used to treat other mental disorders and among different age groups. A recent meta-analysis of 17 evaluations of IPT for adolescents reported large reductions in depressive symptoms following therapy ($d = 1.48$, $p < .0001$) [9]. IPT has also been adapted for use in LMICs by the WHO through the development of a group IPT manual for non-specialist providers [10]. However, results from evaluations of IPT in these settings are inconsistent. For example, in a per protocol analysis of 35 HIV-positive adults in South Africa, group IPT significantly reduced depressive symptoms compared to treatment as usual, but 21/41 participants randomised to receive the intervention did not take it up and three dropped out [11]. In Uganda, group IPT for adolescents significantly improved depressive symptoms among girls but not boys [12]. These findings suggest that while there may be benefits of IPT in multiple contexts, research is needed to understand how, for whom and in what circumstances the intervention works.

IPT in Nepal

Between 2018 and 2020, our team, including researchers and clinicians from TPO Nepal and King's College London, adapted IPT for adolescents with depression in Nepal. Using an iterative mixed methods procedure, we adapted the WHO group IPT manual for delivery by school nurses and lay people in government secondary schools [13, 14]. We conducted an uncontrolled feasibility study of IPT with 62 adolescent boys and girls aged 13 to 19 in the mountainous district of Sindhupalchowk [13]. Adolescents attended 82.3% (standard deviation 18.9) of group sessions. Depression and functional impairment improved between baseline and follow-up at 8-10 weeks post IPT: the Depression Self Rating Scale (DSRS) score decreased from 17.2 (95% confidence interval: 16.5 - 18,0) to 9.5 (8.5 – 10.6), and functional impairment decreased from 12.6 (11.4 – 13.7) to 3.2 (2.5 – 3.9).

Realist cluster randomised trials

Building on our feasibility study, we are undertaking a five-year programme of work including a pilot trial and a phase III cluster-randomised controlled trial (RCT) to evaluate IPT for adolescents with depression in Chitwan, a district in the lowland region of Nepal. Figure 1 presents the overall programme of work. The phase III trial will assess the impact of IPT on depression and its cost-effectiveness. We will also integrate a realist evaluation approach to explore IPT's mechanisms of change and contextual factors that moderate its effects. Realist evaluation focuses on formulating and testing so-called context-mechanism-outcome configurations (CMOCs) which are hypotheses about how context interacts with intervention mechanisms to generate different outcomes in different populations and settings [15].

CMOCs relate to the intervention theory of change and are often informed by stakeholder consultation, existing literature and previous experience of delivering the intervention. Realist evaluation methods can be incorporated in traditional randomised controlled trial (RCT) designs which set out to test a priori CMOCs as well as the overall impact of an intervention [16]. Realist RCTs involve the following three steps: (i) using prior theory and research to develop a theory of change and starting CMOCs); (ii) drawing on qualitative research conducted as part of the process evaluation to refine these CMOCs; (iii) and testing the CMOCs with statistical models identifying the target estimates with the quantitative data from the phase III trial. Techniques may include tests of moderators, mediation and moderated mediation, qualitative comparative assessment and statistical or machine learning methods. In this protocol, we describe the theory of change and starting CMOCs but focus on the study design for the pilot trial - not the phase III trial.

Theory of change for interpersonal therapy for adolescents with depression in Nepal

We developed a theory of change for IPT in Nepal based on findings from the following formative studies:

- a realist review of group psychosocial interventions for children and adolescents in low-and middle-income countries;
- a systematic review of predictors, moderators and mediators of IPT for adolescents;
- workshops with IPT practitioners across the globe to build a transcultural IPT theory of change for adolescents with depression; and
- secondary qualitative analysis of interview transcripts with participants and facilitators in the uncontrolled feasibility study of group IPT for adolescents in Sindupalchowk.

The project team reviewed and revised the theory of change. Figure 2 presents the most recent version. It includes roles for facilitators (delivering therapy and managing groups), school staff and caregivers (supporting adolescents), and adolescents (attending and participating in group sessions). Intervention mechanisms incorporate social learning theory (adolescents acquire communication skills - sharing, listening, giving feedback, and negotiating), attachment theory (adolescents identify and evaluate key interpersonal relationships), mental health literacy (adolescents understand depression is common and can be treated) and problem-solving [17, 18]. Through these mechanisms, adolescents perceive the possibility of an improvement in their interpersonal circumstances and mood, internalise their membership of the IPT group (social identity theory), and improve their ability to empathise and communicate their interpersonal needs (emotion validation) [19]. These mechanisms generate intermediate impacts (relationship initiation and/or

improvement, conflict reduction, perception of hope, self-efficacy and emotion regulation) which in turn generate a reduction in depressive symptoms and improvements in general functioning.

Research aims and questions

We aim to assess the feasibility and acceptability of delivering group IPT in secondary schools in Chitwan Nepal, as well as the feasibility and acceptability of trial procedures. We will address the following research questions:

- Is it feasible to deliver IPT in secondary schools in Chitwan?
- Is the intervention acceptable to participants?
- Is the intervention acceptable to caregivers and teachers?
- Is it feasible to train local lay people to deliver IPT?
- Are trial procedures (randomisation, masking, data collection, safety standard operating procedures, control conditions) feasible to implement and acceptable to participants and schools?
- How reliable are the measures for trial outcomes?
- What are the recruitment, retention and response rates for trial participants?
- How does context affect implementation of IPT?
- Do data from the process evaluation support or refute CMOCs?
- What are the costs per participant of implementing IPT in schools in Chitwan?

Table 1 presents the data we will use to address each of the research questions.

Progression criteria

We will use progression criteria to inform the decision to move to the phase III RCT. For each criterion we will use a traffic light system where green (proceed) indicates the criterion has been met and the phase III RCT should proceed, amber (revise) indicates amendments are needed before proceeding, and red (stop) indicates investigators should not move to the RCT [20]. The criteria, presented in Table 2, are related to the key research questions about the feasibility and acceptability of the intervention and trial procedures. Progression criteria will be reviewed by the TSC and DSMB.

Pilot trial design and methods

Setting

The study setting is Chitwan (चितवन), a mainly rural district in the lowland region of Nepal on the border with India. In the 2021 National Census, Chitwan had a population of 719,859 and 18% were adolescents aged 10-19 [21]. The percentage of the population aged 5 and over who could read and write was 84%, higher than the national average of 76% [21]. The most populous ethnic groups are Brahman (28%), Kshetri (12%), Tharu (10%), Tamang (8%), Dalit (7%), Magar (6%), Chepan/Praja (5%) and Newar (5%) [21]. Eighty-one percent of the population is Hindu, 13% is Buddhist, 4% is Christian and 1% is Muslim [21]. The main economic activity is agriculture.

Mental health care in Chitwan is limited. Between 2014 to 2017, Chitwan was the setting for PRIME (PRogramme for Improving MEntal health care), a research project funded by the UK Government which involved mental health training for primary care providers in 10 primary care facilities [22]. There are no specialised mental health services for children and adolescents, though research indicates that in this age group the mental health burden in Chitwan is sizeable. For example, a study among 371 students aged 15-19 reported that 27% screened positive for depression (using PHQ-9 cut off score of >=10) [23].

Within Chitwan, the pilot trial will run in schools in two rural municipalities, Rapti and Khairahani, with populations of 66,617 and 67,385 respectively [21]. Education and health facilities in each municipality are listed below:

- Number of government primary schools: Khairahani 21; Rapti 41
- Number of government secondary schools: Khairahani 6; Rapti 8
- Number of health facilities: Khairahani - health posts 3, private hospitals 5, government hospitals 1, urban health centre 9; Rapti – health post 5, community health unit 1, hospital 1, basic health service centres 7.

Design

The study design is a parallel two-arm pilot cluster-randomised controlled trial with schools as the unit of clustering. The rationale for using cluster randomisation rather than individual randomisation is that we seek to mitigate contamination resulting from intervention participants using their skills and sharing knowledge to improve their wider social environment. Moreover, cluster randomisation will mitigate potential conflict within schools

where participants and their families perceive individual allocation to the intervention or control condition to be inequitable.

Figure 3 is a flowchart of the trial. The trial will be conducted in eight schools (four intervention and four control). We will assess participants in intervention and control arms at baseline, after the second group session (Midline 1), after the sixth group session (Midline 2), at endline (within two weeks of the final group session) and at follow-up (12 weeks after the final group session). Figure 4 shows the timing of assessments. Midline surveys will enable us to explore how intermediate outcomes change in relation to the primary outcome. Through the follow-up we will assess if any change in symptoms is sustained beyond the intervention. The primary analysis in the phase III trial will be a cross-sectional comparison of mean depressive symptom scores at follow-up across trial arms, adjusted for baseline scores and potential confounders, and accounting for strata and clustering.

Inclusion/exclusion criteria

Eligible participants will be:

- adolescent boys and girls aged 13-19;
- attending a participating school;
- enrolled in class 8, 9 or 11;
- with depression (i.e. scoring 11 or more on the PHQ-A); and
- with functional impairment (i.e. scoring 4 or more on the functional impairment tool).

Adolescents will be excluded if they:

- are in class 10 or 12 because they are busy preparing for School Education and Plus 2 exams;
- are in class 7 and therefore may be too young to benefit from IPT;
- have suicidality (current plan or recent attempt in the past three months) because these adolescents require more acute, intensive treatment; or
- have experienced conversion disorder ("chhopne")[1] in the past three months because group-based treatments may not be appropriate.
- have severe neurological, developmental or physical illness which would prevent them from participating in group therapy

[1] Chhopne is a Nepali term for spirit possession and can lead to mass psychogenic illness in schools. Typically, a student will be affected by motor symptoms of conversion, dissociative trance and/or possession states, which then spread to other students 24. Sapkota RP, Brunet A, Kirmayer LJ. Characteristics of Adolescents Affected by Mass Psychogenic Illness Outbreaks in Schools in Nepal: A Case-Control Study. Frontiers in Psychiatry. 2020;11. doi: 10.3389/fpsyt.2020.493094..

Adolescents who are not suicidal at baseline but become suicidal during the intervention will be assessed and offered individual counselling and/or medication through TPO Nepal, in parallel with the intervention. They will not be excluded. (See *Ethics* below for details of standard operating procedure)

Participants will be recruited from eight government secondary schools in Rapti and Khairahani Municipalities. These two municipalities were selected based on the consent received from the Mayor's Office. There are 14 government secondary schools in these municipalities. One school was excluded because it was already receiving services from TPO Nepal. From the remaining 13 we selected the eight that were easiest to access from the project office. In four schools we will recruit adolescents from class 8, 9 and 11. In the four remaining schools we will recruit adolescents in classes 8 and 9 only. Implementing groups with older and younger adolescents will enable us to explore the feasibility and acceptability of the intervention across these two age groups. Moreover, some of the schools we have selected are for class 1-10 only.

Randomisation

Randomisation will be at the school level and stratified according to whether recruitment at the school includes adolescents from class 11 or not. In total there will be three strata: Strata 1 will comprise two of the four schools from which we are recruiting adolescents in class 8, 9 and 11. Strata 2 will comprise the two remaining schools in class 8, 9 and 11. Strata 3 will comprise schools where we are recruiting in class 8 and 9 only. We will complete screening and the baseline survey in Strata 1 (which will take approximately two weeks) then randomise these schools with a 1:1 allocation ratio to the intervention and control arms. The intervention will then start in these schools. After Strata 1 schools have been allocated, screening and baseline will start in Strata 2 after which these schools will be randomly allocated to the intervention and control arms. The process will then be repeated in Strata 3. In Strata 1 and 2 there are two schools with four groups per school (eight adolescents per group): one male and one female group for Class 8 and 9 combined, one male and one female group for Class 11. In Strata 3 there are four schools with two groups per school: one male and one female for Class 8 and 9 combined. Advantages for stratifying in this way include: (i) the duration between identifying that an adolescent is depressed and the adolescent starting the intervention is minimised; (ii) a staggered start to the surveys - meaning fewer research assistants are needed over the course of the trial; (iii) randomisation can be conducted after baseline with minimal delay. The randomisation will be done by a masked, independent researcher.

Masking and concealment

Research and clinical staff will work independently from separate offices in Chitwan. Figure 5 indicates which members of the trial team will be masked to allocation. Research assistants conducting baseline, midline, endline and follow-up surveys will not be given information about the allocation of schools. Due to the participatory nature of the intervention, adolescents, school staff, IPT facilitators and research assistants conducting the process evaluation will not be masked to allocation. The statistician conducting the final analysis of the pilot trial data will be masked. We will attempt masking at the cluster level: individual schools will not know if they have been allocated to the intervention or control.

Sample size

The pilot trial is not powered to detect an effect of the intervention on depression. In each of the three strata we will recruit 64 adolescents as described above. This gives a total sample size of (n=192). In each of the Strata 1 and Strata 2 schools allocated to the intervention we will pilot four IPT groups of eight adolescents (one group for boys in class 8 or 9, one for boys in class 11, one for girls in class 8 or 9 and one for girls in class 11). In Strata 3 schools we will pilot two IPT groups of eight adolescents (one group for boys in class 8 or 9 and one for girls in class 8 or 9). The decision to include eight clusters was informed by the available budget and resources. Although we will estimate the intra cluster correlation coefficient for depression and the recruitment rate using the baseline data, these will be biased downwards due to the small number of clusters [25]. To calculate the sample size for the full trial, we will triangulate estimates from the pilot trial with estimates from other school-based trials in Nepal and similar settings.

Intervention

We will pilot the IPT intervention we implemented in a feasibility study in Sindhupalchowk [13]. This is based on the WHO group IPT manual and incorporates modifications to the delivery model and content to enhance acceptability and effectiveness. Modifications include: incorporating non-stigmatising Nepali mental health terminology; framing IPT as a life-skills training rather than mental health treatment to mitigate potential stigma towards participants; and using singing, dancing and storytelling to build relationships between group members and improve engagement.

The intervention involves two pre-group sessions and 10 group sessions. In the first pre-group session, the facilitator will meet the participant one to one at school to identify the most relevant IPT problem area, help the participant link their depressive symptoms to the problem area, and gather information about the participant's key relationships and history of depression. In the second pre-group session, the facilitator will meet the participant and their caregiver together, ideally at home, to mobilise support and build rapport with the participant's family. Where a participant's depression is related to their family circumstances, the facilitator will discuss with the participant in advance about what they are comfortable to share with their caregiver.

IPT groups are gender specific and comprise 6-8 participants per group. Each group will be allocated two facilitators: one designated as lead, the other as assistant. Group sessions will take place in a quiet, private space in the school (such as an empty classroom or the library). In the initial group session, the facilitator will focus on encouraging participants to review and share their problems, and instilling hope for recovery. In the middle sessions (2–9), participants will practice interpersonal skills, and offer and receive support from group members to resolve their problems. In the last session, participants will review and celebrate progress, and make plans to tackle future problems.

In each pre-group and group session, participants will review their depressive symptoms with the facilitator using a seven-item symptom checklist developed for the study. This review process helps participants to link changes in symptoms to events in their daily lives, and enables facilitators to identify deterioration and suicidality. We will implement a standard operating procedure to manage adolescents reporting suicidal thoughts, including risk assessment, consultation with an IPT supervisor, communication with parents and, where appropriate, one-to-one intervention for the adolescent with a psychosocial counsellor in parallel with the group sessions.

Recruitment and training of IPT facilitators

We will recruit eight lay people (four men and four women) to train as IPT facilitators. An overview of facilitator recruitment criteria and training is presented in Figure 6. Project clinical supervisors (IP and PS) who are trained in IPT will conduct the training, supported by field clinical supervisors (PP and PK). Supervisors will be supervised by IPT master trainers. The training programme comprises three modules: (i) WHO's *Foundational Helping Skills* – a 10-day module to build basic psychosocial skills (ii) a one-day module focused on group management; (iii) an IPT module involving a five-day didactic workshop focused on theory,

structure, techniques and strategies followed by supervision of a minimum of three practice cases including one individual and one practice group of four or five adolescents. Individual and group practice participants will be recruited from secondary schools in another municipality. Practice group participants will be screened and positive for or with subthreshold symptoms of depression.

At each stage of the training, we will assess facilitators' competency. Foundational helping skills will be assessed during standardised role-plays pre- and post-training using the Enhancing Assessment of Common Therapeutic factors (ENACT) rating scale [13]. We will assess group management skills in role plays and practice groups using the GroupACT tool [26]. Facilitators' understanding of the IPT model will be assessed after the didactic workshop using a paper-based knowledge test. During practice groups, supervisors will assess IPT skills using a standardised rating scale of activities carried out in each session. Based on their competency and availability, we will select three men and three women from the eight trained facilitators to facilitate IPT in the pilot trial.

Comparator – control condition

Participants attending schools in the control arm will receive enhanced usual care. In intervention and control arms, we will train health workers in health posts and primary care centres using the WHO mental health GAP Action training package (mhGAP). Participants in the control clusters will receive a handout with information about the location of these trained health workers and how they can access treatment.

Adolescents in the control cluster reporting a current suicide plan (i.e. in the past two weeks) or suicide attempt in the past three months will be assessed by a psychosocial counsellor employed through the project and offered counselling or referral to other services as per need.

Prior to the baseline survey and randomisation, facilitators will provide an orientation to teachers in control and intervention schools. The orientation will focus on adolescent mental health, raising awareness about depression and building support for adolescents participating in the trial.

Recruitment

In each strata research assistants will visit classrooms to explain the study and offer information sheets and consent forms to: all adolescents in Class 8, 9 and 11 in Strata 1 and

2; all adolescents in Class 8 and 9 in Strata 3. Adolescents will be instructed to bring the consent form back by a certain date if they are interested in being screened and potentially participating in the trial. Research assistants will explain that signing the consent form will not guarantee their participation in the research as we will only recruit a certain number of students who meet the eligibility criteria. In each school in Strata 1 and 2 we will randomly order adolescents who return consent forms signed by their parents, and screen adolescents as per this random order until we recruit the desired number of participants. We will create one random order for adolescents with signed consent forms in Class 8 and 9 and a separate random order for adolescents in Class 11. In these schools we will recruit sufficient adolescents to form one boys' and one girls' IPT group across Class 8 and 9, and one boys' and one girls' group from Class 11 (four groups per school). In each of the four Strata 3 schools we will randomly order adolescents in Class 8 and 9 who return consent forms and screen as per the order until we have sufficient participants for one boys' and one girls' group (two groups per school).

Trial outcomes and measurement

The primary outcome of the pilot trial is progression to the phase III trial based on the progression criteria. The target primary outcome for the phase III trial is depression symptoms measured as a continuous outcome. Target secondary outcomes are functional impairment, anxiety, post-traumatic stress disorder and school attendance. Table 3 presents all the outcomes and tools to measure them.

Data collection, management and monitoring

Research assistants will mainly conduct screening, baseline, endline and follow-up interviews at school in a private place. If participants are not attending school regularly, research assistants will ask to conduct an interview in the participant's home. The interviews will last around one hour. In interviews, the research assistants will administer surveys to the participants primarily face-to-face in their school, outside class hours. We will collect data on demographic characteristics (age, gender, religion, caste/ethnicity, level of education), socio-economic background (income sufficiency, main source of income), target primary (depression), secondary (anxiety, PTSD, functional impairment, school attendance and achievement) and intermediate outcomes (hope, self-esteem, emotion regulation, interpersonal conflict, interpersonal skill use, and social support for both arms, and group cohesion for intervention arm only) and predictors (school climate, gender norms, and adversity). We will use the KoboToolbox data collection platform. Research assistants will

enter data on mobile phones or tablets. We will use automated skip patterns and consistency logic to reduce errors and missing data. We will collect data on school attendance at baseline and endline from school registers.

We will use school and telephone contact to try to follow up all participants. In the feasibility study, COVID-19 lockdown restrictions forced us to conduct some of the baseline survey interviews and all the follow-up interviews by phone. Using regression analysis with tests for interaction, we tested whether the change in mental health outcomes between post-treatment and follow-up differed by whether the post-treatment interview was conducted on the phone or in person. We found no statistically significant differences in depression scores between individuals who had their post-treatment interview conducted in person *v.* over the phone although the sample size was small (n=25, mean difference 0.9, 95% CI -1.7 – 3.5), . In the pilot trial, we will consider phone-based interviews for participants who move out of the area whom we cannot meet in person and further explore any differences that arise by mode of interview.

We will pilot surveys with adolescents' caregivers at baseline and endline. These surveys will enable us to capture more detailed information about household socioeconomic status, parenting behaviours and parental mental health as potential moderators of intervention effect (see CMOC1 below). Due to the limited number of research assistants engaged in the pilot trial we are only able to conduct interviews with caregivers of adolescents in Strata 3. Research assistants will conduct interviews at the caregiver's home or invite them to attend an interview at their son/daughter's school. The interview will include questions on demographics (age, gender, religion, caste/ethnicity, level of education), socio-economic status, parenting skills, depressive symptoms and disruptive behaviour of their son/daughter.

During the surveys, the project coordinator will regularly download data from the server to check the number of interviews completed and identify any errors or missing data. We will pseudonymise the final dataset by removing personally identifiable information and store it on TPO Nepal's secure central server and KCL Sharepoint.

Intercurrent events

Intercurrent events (ICEs) are events that happen post-randomisation which can affect the outcome and analysis of the trial. Potential intercurrent events in the pilot and phase III trial are: dropout, IPT adherence, IPT group relationships, school-related issues such as bullying or academic performance, abuse or suicidality related adverse events, change in school,

and external issues such as family crises. These range from very likely (some attrition is the norm in RCTs) to very unlikely (change of school). Monitoring ICEs, collecting relevant data and communicating their importance to trial participants and facilitators can help mitigate their impact on trial outcomes. Consideration of ICEs in the analysis is described in the statistical analysis section below.

Planned analyses

The trial statistician (JH) will conduct the main quantitative trial analyses. Feasiblity parameters will be summarised descriptively, and 95% confidence intervals constructed to estimate uncertainty and compared to progression criteria. For the clinical and functional outcomes, descriptive statistics will be generated for the baseline survey and trial outcomes for each trial arm at baseline, end of treatment, follow-up and at midline assessment points where specified in the protocol.

The target estimand in the phase III trial is the participant-average treatment effect of IPT on student depression scores at endline, adjusted for clustering and municipality, population being all school students aged 13-19 within Chitwan. For this study summary data will be reported at the participant level rather than the cluster level as this gives the treatment effect for the average participant rather than cluster. Analysis will follow the intention to treat (ITT or treatment policy) strategy with students analysed according to their cluster randomised groups. Primary and secondary outcomes are continuous. The effect of treatment will therefore be the difference in mean outcomes between the treatment and control groups, adjusted for baseline depression score and clustering according to school and municipality. In the pilot trial the focus of the outcome analysis will be to generate effect sizes and confidence intervals (adjusted for clustering) for the treatment estimates. Relevant intercurrent events to the primary (and secondary) analyses are drop-out and adherence which are summarised as part of the feasibility assessment.

It is anticipated there will be sufficient numbers to run a version of the models for the phase III trial, a linear mixed model with depression scale (PHQ-A) as outcome, treatment group, time, baseline depression score and municipality as fixed effects and cluster as a random effect. The statistical estimate for treatment estimand is derived from the linear contrast between treatment groups at endline. One issue in the analysis of cRCTs is the impact of informative cluster size on the accuracy of the treatment effect estimate [27]. With different cluster sizes, participants in different sized clusters will have different weights and so will not contribute equally to the analysis. This might happen through differential drop-out between

the clusters and so drop-out will be described at the cluster and individual level. Also, recruitment (and therefore cluster size) may be better related to school level factors such as size of the school. An additional consideration is that there might be clustering by IPT group in addition to school level clustering, although with eight groups it is likely to be underestimated.

We will obtain preliminary estimates of differences in primary and secondary outcomes by trial arm at the cluster level (point estimate and confidence interval), without statistically testing for between-group differences.

Process evaluation

A more detailed process evaluation protocol has been drafted and is summarised here. In intervention clusters, we will collect data on intervention fidelity, context, mechanisms and dose using competency checklists (ENACT, GroupACT, IPT checklist), unstructured observation of group sessions, notes on facilitator supervisions with clinical supervisors and attendance registers from group sessions. For each IPT group a supervisor will observe the initial session, two sessions from the middle phase and the termination session (four sessions per group). We will generate a quantitative score for intervention fidelity using the IPT checklist. This is a checklist of key session components that should be carried out by the facilitator (e.g. discusses confidentiality, outlines group rules, works to establish rapport, and skills related to the IPT problem areas). Whilst observing IPT sessions, the supervisor rates each component as superior, satisfactory, needs improvement, or failed to attempt. We will calculate fidelity as the percentage of session components rated superior or satisfactory, averaged across observed sessions. Treatment adherence will be calculated as the percentage of group sessions attended.

At endline we will conduct focus group discussions (FGDs) and interviews to explore possible mechanisms of IPT and contextual moderators of IPT's effects with facilitators, teachers, caregivers and adolescents. Table 4 lists the process evaluation data collection methods. We will analyse quantitative data from the baseline and endline survey. Interviews and FGDs will last around one hour. Among the intervention arm participants, we will invite a sub-group of six adolescents for individual interviews and a different sub-group of 8-12 for FGDs. Adolescents will be purposively sampled based on their gender, age, ethnicity/caste and level of participation in IPT group sessions (high *v.* low attendance). Six caregivers will be purposively sampled for individual interviews (three mothers, three fathers), based on the gender and age of their child – we would like a mix of genders and ages of adolescents. All

IPT facilitators will be invited to join one interview and one FGD. Teachers from class 8, 9 and 11 will be purposively sampled for two FGDs (four to six participants in each). We will interview school nurses from participating schools to explore their opinions on how school nurses could be involved in supporting IPT groups in the future. All school principals will be recruited and interviewed separately. Adolescents will be recruited at group sessions. Caregivers will be recruited through adolescents, facilitators and teachers or approached directly by members of the research team.

A research assistant who is dedicated to the process evaluation and therefore unmasked will conduct the interviews and FGDs. These will take place in school or in a community space where participants cannot be overheard. We will use a topic guide to structure interviews and FGDs. Draft versions of these topic guides are included in the Appendix.

Interviews and FGDs will be conducted and transcribed in Nepali, and translated into English, We will use the Framework Approach to analyse transcripts [28]. This involves coding data using analytical framework incorporating themes related to fidelity, context, mechanisms and dose. Coding is then summarised in a matrix to help identify patterns in the data, before being organised into higher level descriptive and analytical categories.

CMOCs

From the theory of change, we generated multiple CMOCs. We prioritised four of these by considering what information would be most useful to policy makers in terms of simplifying IPT, making IPT shorter and cheaper, and its potential transferability (who does/does not benefit).

CMOC 1

Context: For students of higher socioeconomic status not experiencing structural vulnerability or intractable adversity and having more opportunities to implement new strategies.
Mechanism: IPT enables participants to participate in discussions through which they learn and implement strategies to develop hope, reduce conflict, build relationships and improve self-efficacy.
Outcome: This generates reductions in depression.

CMOC 2

Context: For students in schools with school climates characterised by strong student-staff and student-student relationships and norms of mutual respect and social support and thereby having more opportunities to implement new strategies.
Mechanism: IPT enables participants to participate in discussions through which they learn and implement strategies to reduce conflict and build relationships.
Outcome: This generates reductions in depression.

CMOC 3

Context: For boys who do not experience cultural norms or structural violence which impede opportunities to implement new strategies.
Mechanism: IPT enables participants to participate in discussions through which they learn strategies to develop hope, reduce conflict, build relationships and improve self-efficacy.
Outcome: This generates reductions in depression.

CMOC 4

Context: For older (and more cognitively able?) students more cognitively able to consider others' perspectives, learn negotiation skills, develop solutions to interpersonal problems, understand links between events and mood, manage anger and name and express emotions.
Mechanism: IPT enables participants to participate in discussions through which they learn strategies to develop hope, reduce conflict, build relationships and improve self-efficacy. Measure cognitive ability to understand and apply skills (knowledge quiz) – could also consider a self assessment of skills
Outcome: This generates reductions in depression.

CMOC 5

Context: For students participating in initial sessions and participating in discussions which validate participants' experiences and instil hope.
Mechanism: IPT enables participants to develop hope and motivation to engage in the intervention.
Outcome: This generates immediate reductions in depression.

We will refine the CMOCs by analysing qualitative and quantitative process evaluation data. Table 5 lists these data. In addition to data collected through the trial and process evaluation we will also conduct semi-structured interviews with 30 adolescents (20

depressed and 10 non-depressed) from schools which are not participating in the trial. In these interviews we will specifically explore themes from the CMOCs including age, gender, socioeconomic status and school climate and how they influence adolescents' experiences of depression.

Cost analysis

We will do an activity-based cost analysis of the implementation of IPT from the provider perspective. Costs from monthly project accounts will be entered in an Excel tool, divided into start-up or implementation costs, and allocated to different cost centres (capital, staff, and materials) and intervention activities (e.g. adaptation, training, facilitation, etc.). Through interviews with project staff members, we will collect information about how they divided their time across activities and thus how to allocate their salaries. The total cost of the intervention will be annualised then divided by the number of participants in a year to estimate a unit cost per IPT participant.

Incentives

We will cover transportation costs incurred by adolescents and adults participating in the process evaluation and they will also be offered refreshments (juice and biscuits). Phone credit will be offered as an incentive to adolescents and caregivers participating in the surveys.

Post-trial care

Where required, a psychosocial counsellor employed by TPO Nepal will remain in the study setting to provide follow-up care for participants.

Ethics

We have ethical approval from the Nepal Health Research Council (ref no. 701) and King's College London Research Ethics Committee (HR/DP-22/23-37705).

At the school level, we will take written consent from the school principal to screen adolescents and for randomisation. Eligible adolescents who wish to participate in the trial will be asked to take home a written information sheet and consent form. We will obtain written consent from adolescents which will be collected before the baseline survey is conducted. For adolescents aged 17 and younger we will take consent from their caregiver

and adolescent assent. We will obtain written consent from any caregiver, teacher or IPT facilitator from whom we collect data.

Disclosures of suicidality will be handled according to the type of participant.

i) Trial participants

All potential adolescent trial participants will be assessed for suicidality at screening and those identified as high risk (i.e., current suicide plan or attempt in the last three months) will be excluded from the trial and referred to the psychosocial counsellor for further assessment and safety planning, referrals and follow-up. Adolescents participating in the trial will be assessed for suicidality in each survey. Facilitators will assess intervention participants for suicidality in pre-group and group sessions. If a participant is identified as high risk (i.e., current suicide plan or attempt since last assessment), the research assistant or facilitator will activate a standard operating procedure (SOP) which involves alerting the project coordinator and linking with the clinical team. Participants who are not high risk but disclose suicidal ideation at any given time will be given the number of the suicide hotline where they can receive support 24/7. All participants will be provided with a contact number for the project team to call in the event of an emergency.

i) Process evaluation participants

a. If an adolescent discloses suicidality to a research assistant we will follow the SOP for suicide to assess risk and inform management and referral.
b. Adults - Caregivers who disclose suicidality will be given information about trained local health workers. The SOP for suicide can be triggered anytime a research assistant has a reason to suspect suicidal risk, as indicated in the SOP, or whenever a participant approaches a research assistant, or any research team member expressing safety concerns. The same procedure will be followed if risk is identified among caregivers, facilitators, teachers, nurses, or school principals.

There is a separate SOP for disclosures of abuse which includes a safety assessment and planning and potential referral to the women and children government officer attached to the local municipality, or to the local primary health care centre where physical and mental health problems can be further assessed and managed.

Harms

There are no anticipated harms for participants or schools but there may be unanticipated harms. We will assess these by analysing outcomes at endline and follow-up, by collecting information on any adverse events, and exploring potential harms through the qualitative interviews and FGDs in the process evaluation. King's College London is the sponsor. There will not be a Data Safety and Monitoring Board (DSMB) for the pilot trial. Any serious adverse events will be reported immediately to the Trial Steering Committee (TSC) who will decide what action should be taken. We will report other adverse events to the TSC at follow-up.

Trial registration and conduct

We have registered the trial with the ISRCTN registry. We will follow MRC Guidelines for Global Health Trial Management.

Dissemination

We will publish findings from the pilot trial including the process evaluation and analysis of realist data in academic journals. We will organise dissemination events in Chitwan and Kathmandu, with national and local government officials, adolescents, caregivers, teachers, researchers and non-governmental organisations.

Timeline

Figure 7 presents the SPIRIT enrolment, intervention and assessment schedule.

Trial status

As of July 2024, recruitment is complete. IPT groups have finished in all three strata. Endline and follow-up surveys are ongoing.

Tables

Table 1: Research questions and data sources

Question	Data sources
Is it feasible to deliver IPT in secondary schools in Chitwan?	● Proportion of planned IPT sessions delivered ● Focus group discussion and interview transcripts with IPT facilitators, adolescents, teachers and caregivers
Is the intervention acceptable to participants?	● Proportion of adolescents who consent to participate in the trial ● Proportion of IPT sessions attended by intervention participants ● Proportion of all schools invited who agree to participate in the trial ● Intervention participant treatment satisfaction surveys ● Focus group discussion and interview transcripts with intervention participants
Is the intervention acceptable to caregivers and teachers?	● Focus group discussion and interview transcripts with caregivers and teachers
Is it feasible to train and supervise local lay people to deliver IPT?	● Therapeutic competency assessed with ENACT and GroupACT tools ● Intervention fidelity assessed with the IPT checklist ● Proportion of facilitators trained who pass a paper-based IPT knowledge test ● Proportion of IPT sessions observed by supervisors ● Number and type of adverse event and response ● Focus group discussion and interview transcripts with intervention participants and facilitators
Are trial procedures (randomisation, masking, data collection, safety standard	● Proportion of eligible adolescents and schools that consent to participate in the trial ● Baseline, midline, endline and follow-up survey response rates ● Proportion of schools that consent to participate and are retained throughout the trial

operating procedures, control conditions) feasible to implement and acceptable to participants and schools?	● Focus group discussion and interview transcripts with IPT facilitators, adolescents, teachers and caregivers ● Caregiver survey response rates ● Rates of missing items on trial outcomes
How reliable are the measures for trial outcomes?	● Research assistant inter-rater reliability for primary and secondary outcomes ● Internal consistency of each outcome measure
What are the recruitment, retention and response rates for trial participants?	● Proportion of eligible adolescents and schools that consent to participate in the trial ● Proportion of trial participants and schools retained at endline ● Trial participant baseline, midline, endline and follow-up survey response rates
How does context affect implementation of IPT?	● Focus group discussion and interview transcripts with IPT facilitators ● Recruitment, retention and response rates by gender, school, age
Do data from the process evaluation support or refute CMOCs?	See Table 5
What are the costs per participant of implementing IPT in schools in Chitwan?	● Cost data ● Time sheets ● Interviews with SAATHI-2 team members

Table 2: Progression criteria

Research question	Criterion	Indicator	Green	Amber	Red
Is it feasible to deliver IPT in secondary schools in Chitwan?	Intervention implementation	Percentage of planned IPT sessions delivered	>70%	40-70	<40
Is the intervention acceptable to participants?	Participant treatment satisfaction	Percentage of participants rating IPT as 'quite helpful' or 'very helpful';	>67	30-66	<30
	Treatment adherence	Percentage of participants who attend more than 70% of IPT group sessions	>50	20-50	<20
Is it feasible to train local lay people and school nurses to deliver IPT?	Fidelity to IPT	Percentage of session components rated superior or satisfactory, averaged across observed sessions	>60	30-59	<30
	Serious adverse events	Percentage difference in serious adverse events in the intervention arm compared to the control arm	<4	4	5
Are trial procedures (randomisation and data collection) acceptable to participants and schools?	Eligible adolescents agree to participate	Percentage of eligible adolescents with informed consent at baseline	>80%	50-80	<50
	Eligible schools agree to participate	Percentage of schools approached that agree to participate	>60%	30-60	<30
	Missing data	Percentage of missing items on primary and secondary outcome	<15	15-50	>50
	Participant retention	Percentage of participants completing the endline survey	>70%	30-70	<30

Table 3: Potential outcomes and tools

Outcome type	Outcome	Assessment timepoint	Potential tools	Notes
In-session	Depression	Start of each pre-group and group session	IPT-A in-session weekly symptom check	7 items, response options presented as emojis
	Satisfaction	Endline	Treatment satisfaction	Adapted from Mufson 2015.
Primary	Depression	Baseline, midline1, midline 2, endline and follow up	PHQ-A	MMAP translation
Secondary	Functional impairment	Baseline, midline1, midline 2, endline and follow up	Locally developed tool	Adapt for Chitwan and for boys and girls
	Anxiety	Baseline, endline and follow-up	Generalised Anxiety Disorder Assessment (GAD-7)	MMAP translation
	Post-traumatic stress disorder	Baseline, endline and follow-up	PCL-C (8-item abbreviated version of the PTSD Checklist 5)	
	School attendance	Baseline and endline	Number of days attended in the 18 school days prior to the baseline (excluding school closures and Saturdays)	Collect data from school register
	Educational performance	Endline	End of year examination	
	Quality of Life	Baseline and endline	EuroQol-5 Dimension 5 levels (EQ-5D)	
Intermediate	Hope	Baseline, midline 1, midline 2, endline, follow-up	Children's Hope Scale	6 items
	Emotion regulation	Baseline, midline 1, midline 2, endline, follow-up	Difficulties in Emotion Regulation Scale (DERS-SF) 18 items	Used in ALIVE

	Self efficacy	Baseline, midline 1, midline 2, endline, follow-up	General Self-efficacy Scale	
	Social support	Baseline, midline 1, midline 2, endline, follow-up	Multidimensional Scale of Perceived Social Support	Need to add to battery
	Group cohesiveness	(intervention group only) Midline 1, midline 2, endline, follow-up	PM+ Group Cohesiveness scale	Used in PM+
	IPT skills	Midline 1, midline 2, endline, follow-up	Interpersonal Psychology Skills Scale	
	Conflict reduction		Social Adjustment Scale Self Report	
Predictors	Socio-economic status	Baseline	Social and Economic Measure for Adolescents	
	School climate	Baseline, endline	Beyond Blues	Used in HASHTAG
	Gender norms	Baseline	Johns Hopkins Global Early Adolescent Study	9 items
	Adversity	Baseline	Johns Hopkins Global Early Adolescent Study	13 items
Caregiver	Socioeconomic status	Baseline	Social and Economic Measure for Caregivers	Used in ALIVE
	Depression	Baseline, endline	Patient Health Questionnaire 9 items	Used in ALIVE
	Parenting	Baseline, endline	Alabama Parenting Questionnaire 19 items	Used in ALIVE
	Disruptive behaviour	Baseline, endline	Disruptive Behavior International Scale – Nepal version (DBIS-N) 10 items	

Table 4: CMOCs and data to refine them

CMOC	Qualitative analysis	Quantitative analysis
CMOC 1 Context: For students of higher socioeconomic status not experiencing structural vulnerability or intractable adversity and having more opportunities to implement new strategies. Mechanism: IPT enables participants to participate in discussions through which they learn and implement strategies to develop hope, reduce conflict, build relationships and improve self-efficacy. Outcome: This generates reductions in depression	Analysis of SSI transcripts with participants from different socioeconomic backgrounds with and without exposure to adversity (direct and indirect probing on CMO). SSIs with facilitators, direct and indirect probing of marginalisation, exclusion by SES	Comparison of engagement - attendance, items 1-4 on group cohesion scale- by SES and exposure to adversity: Comparison of mean depression score (PHQ-A) by SES and exposure to adversity Comparison of ability to implement IPT-self efficacy, hope, conflict and relationship initiation/improvement- by SES and exposure to adversity
CMOC 2 Context: For students in schools with school climates characterised by strong student-staff and student-student relationships and norms of mutual respect and social support and thereby having more opportunities to implement new strategies. Mechanism: supportive for implementation or amenable for adolescents to implement ipt skills Outcome: This generates reductions in depression.	Analysis of SSI and FGD transcripts and transect walks with participants sampled to represent different school climates (baseline Beyond Blue score), facilitators, school principals, teachers and nurses probing on CMO	Comparison of mean depression score (PHQ-A) by Beyond Blue Score Comparison of ability to implement IPT-self efficacy, hope, conflict and relationship initiation/improvement- by Beyond Blue Score
CMOC 3 Context: For boys who do not experience cultural norms or structural violence which impede opportunities to implement new strategies. Mechanism: IPT enables participants to participate in discussions through which they learn strategies to develop hope, reduce conflict, build relationships and improve self-efficacy. Outcome: This generates reductions in depression.	Analysis of SSI and FGD transcripts with participants sampled to represent different genders and facilitators, caregivers and teachers probing on CMO	Comparison of ability to implement IPT-self efficacy, hope, conflict and relationship initiation/improvement by gender Comparison of scores on gender norm scale with ability to implement IPT, self efficacy, hope, conflict and relationship initiation/improvement

		(SAS-SR), and depression (PHW-A) score
CMOC 4 Context: For older (and more cognitively able?) students more cognitively able to consider others' perspectives, learn negotiation skills, develop solutions to interpersonal problems, understand links between events and mood, manage anger and name and express emotions. Mechanism: IPT enables participants to participate in discussions through which they learn strategies to develop hope, reduce conflict, build relationships and improve self-efficacy. Outcome: This generates reductions in depression.	Analysis of SSI and FGD transcripts with older and younger participants and facilitators, caregivers and teachers probing on CMO	Comparison of IPT knowledge test and IPT skills scores, emotion regulation (DERS) by age Comparison of depression outcomes (PHQ-A) by age
CMOC 5 Context: For students participating in initial sessions and participating in discussions which validate participants' experiences and instil hope. Mechanism: IPT enables participants to develop hope and motivation to engage in the intervention. Outcome: This generates immediate reductions in depression.	Analysis of SSI and FGD transcripts with participants and facilitators probing on CMO	Exploring temporal relationship between hope and PHQ-A score by plotting baseline, midline and endline data.

Table 5: Process evaluation data collection in the intervention arm

Method	**Timing**	**Process indicator**
Quantitative attendance data collected by IPT facilitators at each group session	Throughout intervention	Dose
Intervention fidelity data collected using the IPT checklist by clinical supervisors	For each group: 1 observation in the initial phase, 2 observations in the middle phase and 1 observation of the termination phase (4 per group)	Fidelity
Unstructured observation by clinical supervisors – field notes about IPT sessions and informal conversations	For each group: 1 observation in the initial phase, 2 observations in the middle phase and 1 observation of the termination phase (4 per group)	Fidelity, context, mechanism
Transcripts of IPT group sessions	For each group: 1 observation in the initial phase, 2 observations in the middle phase and 1 observation of the termination phase (4 per group)	Mechanism
Notes on supervisory meetings between clinical supervisors and facilitators	Throughout intervention	Fidelity, mechanism
Facilitator competency data collected using ENACT and GroupACT	Pre-training, post training (ENACT and GroupACT), in-vivo (initial, middle and termination group sessions (GroupACT only in parallel with IPT checklist)	Fidelity, mechanism
Interviews with participants (n=20)	Spread interviews over endline and follow-up	Context, mechanism
Group discussion with facilitators (n=2)	Endline	Fidelity, context, mechanism
Interview with school teachers/principals	Endline	Context, mechanism
Interview with school staff – school nurses, school principals, teachers (n=17-20)	Endline	Context, mechanism
Interview with caregivers (n=10)	Endline	Context, mechanism
Midline quantitative surveys with IPT participants to measure intermediate outcomes	After group session 2 and 6	Mechanism

Figures

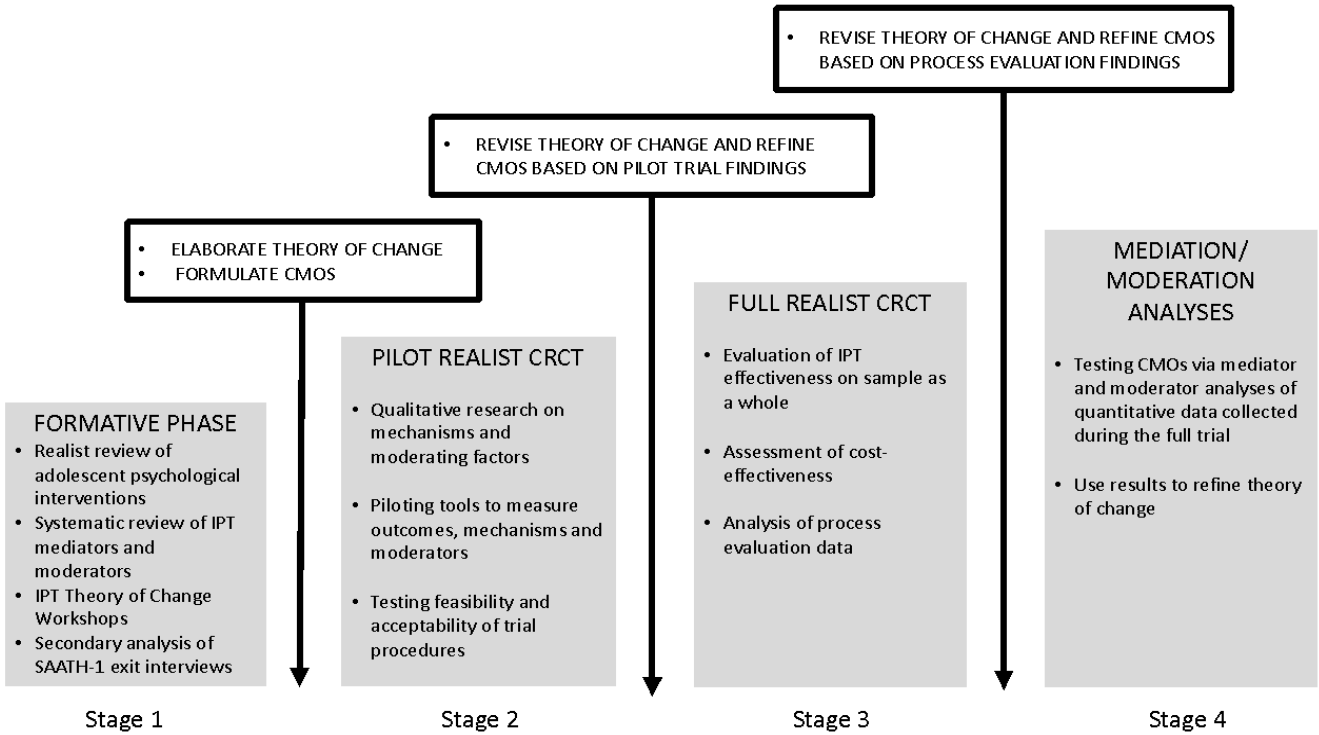

Figure 1: Overall programme of work

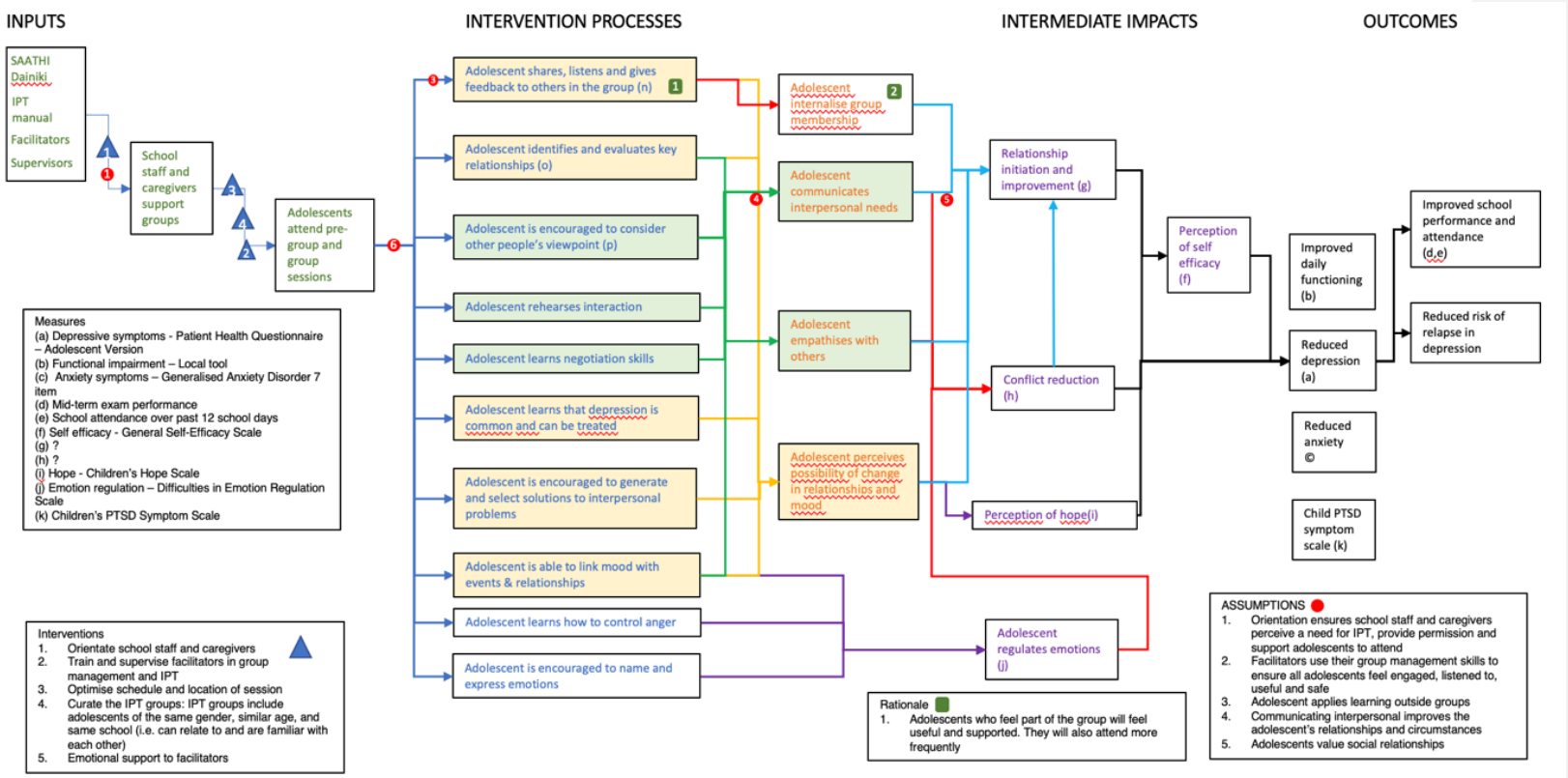

Figure 2: Interpersonal therapy theory of change

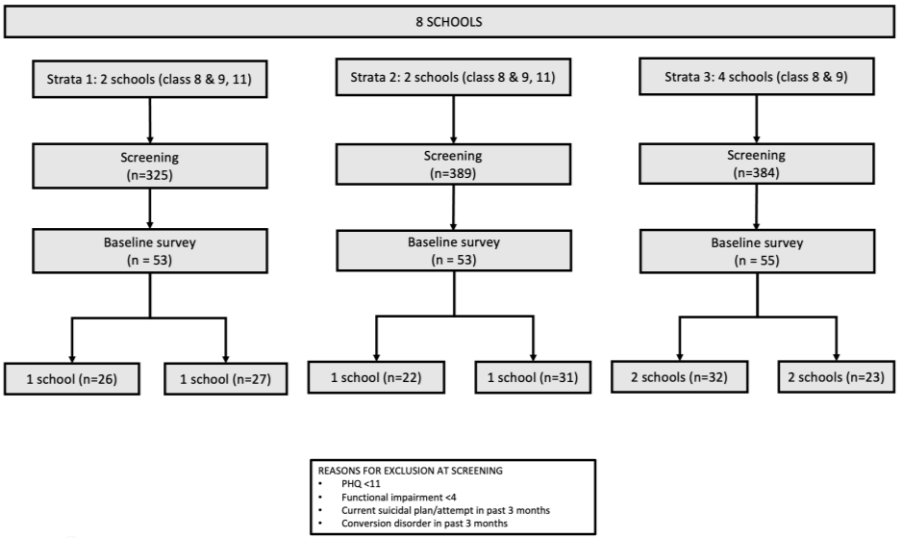

Figure 3: Participant flow chart

Commented [RCK1]: I removed the Figure with the maps because of the potential copyright and problems if we publish. I think I copied the maps from Wikipedia!

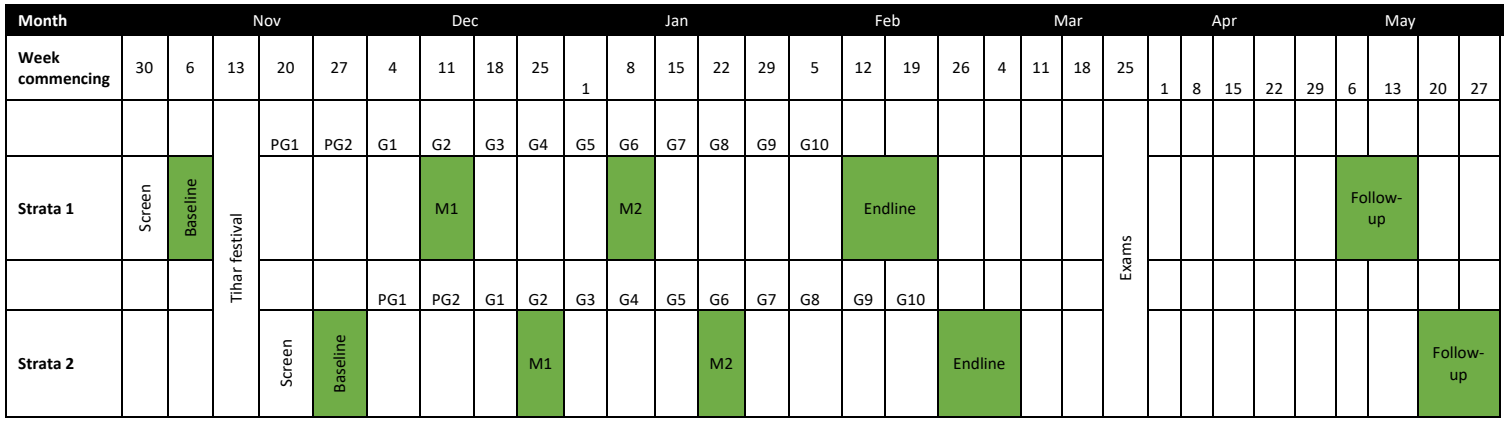

Figure 4: Timeline of assessments

Figure 5: Masking in the trial team

*Black indicates the team member is masked to allocation

TRAINING CONTENT	RECRUITMENT CRITERIA Essential • Education 10+2. • Aged 20-25 years • Nepali citizenship • Able to reside in Chitwan during the trial Desirable • Experience working with adolescents • Experience working in an NGO	MODULE 1: FOUNDATIONAL HELPING SKILLS (10 days) • Nonverbal communication and active listening • Verbal communication skills • Confidentiality • Rapport building and self-disclosure • Exploration, interpretation and normalisation of feelings • Empathy, warmth and genuineness • Assessment of harm • Connecting to social functioning and impact on life • Causal and explanatory models • Involvement of family • Goal setting • Promotion of hope • Coping mechanisms • Psychoeducation • Eliciting feedback	MODULE 2: GROUP MANAGEMENT SKILLS (1 day?) • Collaboratively develop and regularly review group ground rules and guidelines • Participation of all group members • Fostering empathy between group members • Guiding collaborative proble—solving • Mitigating barriers to attendance • Confidentiality among group members • Time management and pacing	MODULE 3: INTERPERSONAL THERAPY Didactic workshop (5 days) • Principles and theory • Initial, middle and termination phases • Safety planning • Treatment techniques Supervision of practice cases • Minimum of 2 individual cases and one group
ASSESSMENT TOOL	INTERVIEW	ENACT	GROUP-ACT	IPT KNOWLEDGE TEST IPT CHECKLIST

Figure 6: Training programme for IPT facilitators

		STUDY PERIOD					
	Enrolment	**Post-allocation**				**Endline**	**Follow-up**
TIMEPOINT**	***Aug-Sep 23***	***Sep – Oct 23***	***Nov – Dec 23***	***Jan – Feb 24***	***Feb – Mar 24***	***Apr – May 24***	***Jun – Jul 24***
ENROLMENT:							
School recruitment							
Participant screening							
Allocation							
INTERVENTIONS:							
Interpersonal therapy							
Enhanced usual care							
ASSESSMENTS:							
Baseline survey	X						
Midline 1 survey		X					
Midline 2 survey			X				
Endline survey						X	
Caregiver assessment	X					X	
Process evaluation and realist data collection		X	X	X	X		
Follow-up survey							X
Analysis, reporting and dissemination							X

Figure 7: Study time frame

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APPENDIX

Appendix A: Process evaluation topic guides

IPT participating adolescents' topic guide on implementation and CMOs

THEMES	**PROBES**
Thank you for agreeing to be interviewed. We would like to understand your experience of IPT. Understanding this might help us to make IPT better for adolescents in the future. Please be open with us. There are no right or wrong answers, and we will not be offended if you tell us anything negative about IPT. Your experience is very important which is why we are here today.	
Accessing IPT (Barriers & Facilitators)	
How did you decide to join IPT?	Did you consult with your parents or friends to make a decision? If so, what were their suggestions? Did you have any concerns about joining? Did you worry about stigma, missing classes? How did you decide at the end to join?
Attending IPT (Barriers & Facilitators)	
How was your experience attending the Sessions?	

What made it difficult to attend the sessions each week?	Stigma, missing out on chores/schoolwork/leisure activities/timing/commute
What made it easier to attend the sessions each week?	Sessions being in school/timing/peers joining/school support/parent support
Online sessions (Did you participate in a virtual session?)	
Compared to the face to face group sessions what did you think of the online sessions?	What did you like? What did you dislike?
How easy or difficult was it for you to join the virtual sessions? Why?	Access to a phone, privacy in your home, internet connection, noise
How can we improve the online sessions?	
Mechanism of IPT	
What did you think of IPT?	What did you like and dislike? And why?
Benefit Mechanisms	
What type of problems do you think IPT helped you with? (ask for an example) [OUTCOMES]	Mention a couple: Improved symptoms (e.g., better mood, less guilty, more hopeful), better sleep and appetite, better concentration, improved functioning (e.g., school, social)
What aspect of IPT helped with this problem ? (ask for an example) [INTERVENTION PROCESSES AND ACTIONS]	Mention a couple: Space to heal (sick role), linking events to mood, daily mood check, learning communication skills, decision analysis, practice at home, group setting
How do you think IPT was helpful with those problems? [MECHANISM]	1) Reducing interpersonal conflict 2) Increasing social support 3) Feeling supported by the group 4) IPT skills use 5) Improved Self Efficacy 6) More hopeful 7) More aware of emotions and able to control them

During the program, you first had an individual session, then pre-group, then 10 group sessions. I am curious, when did you start feeling better? Was it after the first session, or towards the end of the groups?	Do you think this was once you got to talk about your problem area?
Harm Mechanisms	
You said you did many activities in the group, what parts of IPT was not helpful to you? (ask for an example) [INTERVENTION PROCESSES AND ACTIONS]	- Groups being held in school, affecting classes - IPT components (e.g, practice at home, roleplays, strategies)
IPT might also have a negative effect on your life. We would like to understand this better. What type of negative effects do you think it had on your life? [OUTCOMES]	
If yes, how do you think IPT caused these problems? [MECHANISMS]	1) missing out on work/coursework 2) stigma/labelling 3) ruminating over problems 4) pick up harmful behaviour
Context of IPT	
Now I would like you to think about your own group. How many were you? What were the ages? In your IPT group, do you think some kids benefited more than others? Do you think some kids did not benefit at all? [CONTEXT]	- Why?
Do you think, all kids from all backgrounds can benefit from IPT? [CONTEXT]	- High SES/Low SES - Older/younger - Girls/boys

What do you think is necessary for IPT to work? [CONDITIONS]	- Supportive family - Supportive school environment - Have basic needs met - Adversity
Now I want to ask about your school and how it affected your experience of doing IPT. Can you tell me what your teachers thought about you participating in IPT?	- Were they supportive or unsupportive, or both? - Why?
Can you tell me what your parents thought about your participation in IPT?	-
Now I want to hear about what your classmates - What did they think about you participating in IPT?	-
What help or support did you get from your parents, teachers or classmates when you were participating in IPT?	-
Whilst you were participating in IPT did your parents, teachers or classmates do any unhelpful things? What were they?	- How did they affect you?

Caregivers of IPT participating adolescents' topic guide on implementation and CMOs

THEMES	**PROBES**
Thank you for agreeing to be interviewed. We would like to understand your experience of having your child join our program. Please be open with us. There are no right or wrong answers, and we will not be offended if you tell us anything negative about the program. What was the name of your son/daughter who attended the program? [Write down the NAME. If there were more than one adolescent who attended the program, make sure that the answers capture both kids]	
Accessing the program (Barriers & Facilitators)	
What did you think about [NAME] joining the programme?	
Did you have any concerns about [NAME] joining? What were your concerns?	Did you worry about stigma, missing classes?
What made you decide to let them join?	
How do you think we could encourage other caregivers to let their adolescent join a program like this?	- Parent orientations - Lived experiences sharing
Attending the program (Barriers & Facilitators)	
Adolescents were asked to attend the programme every week. How easy or difficult was it for [NAME] to attend every week?	
What were the reasons why [NAME] had to miss sessions?	Missing classes, not attending house chores?
What could we have done differently to make it easier for your [NAME] to attend?	Explained better about the programme? Changed the session timing? Incentives?
Mechanism of IPT	

Because this is the first time we are testing the programme in Nepal we care very much about what parents think about it. What did you think about the programme?	What did you like and dislike? Helpful or unhelpful? Why?
What type of changes did you see in [NAME] because of their participation in the programme? Do you have an example?	1) In terms of heart-mind problems (getting better or worsening), 2) School: going to school more frequently, better grades in school (missing school or worse grades)
When did you start seeing those changes?	Did you see benefits (or harm) after the pre-group sessions, or after the first couple of IPT sessions, or towards the end of the sessions?
You said, you saw [REPEAT THE CHANGES THAT THE CAREGIVER MENTIONED HERE]. We are trying to understand more about this, to see how and why this program resulted in those changes.	
Did you notice [NAME] use any techniques or skills he learned in the program?	Would [NAME] talk about what was learned in the program?
How did [NAME]s relationships change, while he/she was in the program? Can you give us examples?	Can you tell us about the arguments your son/daughter has? Have you noticed if your son or daughter is more/or less argumentative since participating in the programme? How so? Why do you think they are less/more argumentative? Have you noticed any changes in the way your son/daughter talks to you about their

	feelings? Their needs? Do you think this could have prevented arguments?
Since participating in the programme, have you noticed any changes in [NAME] in terms of their friends and friendships?	What were the changes? How did these changes affect [NAME]'s mood and behaviour?
Sometimes we do things to help us cope with our feelings (like when we feel angry, sad or worried). Doing these things helps us to feel calm and feel better. Did you notice [NAME] do things to feel better?	Give examples - Going out for a walk, drawing, meeting friends, or other things could be used to change one's negative feelings. Did you notice [NAME] do such things? Have you noticed them doing more or less of these things since participating in the programme?
We all face problems in life, regularly. We might have financial, health, school-related problems. Did you notice any changes in [NAME]'s ability to solve problems in life?	What do you think about this? Do you have any examples of problems that [NAME] has solved since participating in the programme?
We sometimes lose hope about our future and our future feels dark and bleak. Other times we feel more hopeful that our future will be good and bright. Did you notice any change about how [NAME] talks about the future since they have been in the programme?	Were they more or less hopeful about life? How can you tell?
Unintentionally it's possible the programme had some negative effects. Do you think the programme had any negative effects?	For [NAME]? For your family? E.g. 1) Preventing kids from working or helping with chores, or homework, so being burdensome 2) Making the kids feel labelled,

	discriminated against 3) Talking or thinking about problems made them feel worse/more fragile. 4) Kids pick up negative habits from peers.
Context of IPT	
Now we want to hear from you about who you think can and who can't benefit from a programme like this.	-
Do you think, all adolescents from all backgrounds can benefit from the programme?	- Girls/boys - High SES/Low SES - Older/younger
Can you think of any kinds of adolescents who wouldn't be helped? Why wouldn't they be helped?	-
Now I want to ask about your adolescent's school. How did the school support [NAME] to participate in IPT? Can you give examples?	- Were they supportive or unsupportive, or both? Why?

School principal/teacher/school nurse SSI topic guide (implementation and CMOs – indirect)

THEMES	**PROBES**
Icebreaker: Thank you for agreeing to be interviewed. We have been doing a programme in your school to help adolescents with heart-mind problems. This is the first time running such a programme in Chitwan so we are interested to hear what you think about it and how we can improve it. Please be open with us. There are no right or wrong answers. Your experience is very important which is why we are here today.	
ICEBREAKER	
To start with, please tell us a little bit about yourself and your work as a **School principal/teacher/school nurse**.	
What do you enjoy about your job? Why?	
What are the main challenges of your job?	
We have been working with adolescents with heart mind problems. Do you ever come across such adolescents in your work as a School principal/teacher/school nurse?	
Trial Implementation	
Now I want to ask you some questions about the programme we have been running in your school.	
Can you tell us about your experience of the groups ?	How did you come to know about them? What is your impression of the groups? What did other staff members think about the groups? Why?

What did you like about the program? What encouraged you (or would encourage you) to support the program?	
What did you not like about the program? What discouraged you from supporting these groups in schools?	
What could we do differently to improve our program?	- Recruitment, surveys, treatment
IPT and CMOs (mechanism and context)	-
Now, we would like to ask more specific questions about your observations on how the program helped or did not help. First, do you know any students who participated in the IPT program? Do you remember their names [write down their NAMES. If they don't know any student in particular, the questions will have to be asked more broadly about the school]?	
When you think about [NAMES or STUDENTS in school generally], did you see any changes in them, since the program started? Do you have an example?	Improved mood Improved social functioning and school functioning (attendance, grades)
What type of changes did you see in those students?	1) Reducing conflict with parents, peers, teachers, 2) Making them feel more capable in life, 3) Making them feel more hopeful, 4) Support from the others in the program, 5) Better social support, reduced isolation in general 6) Manage emotions better

Was the programme harmful in any way in your school? Can you give a specific example? What was the negative impact of the programme on this student, or other students?	1) Preventing kids from working or helping with chores, or homework, so being burdensome 2) Making the kids feel labelled, discriminated against 3) Talking or thinking about problems made them feel worse/more fragile. 4) Kids pick up negative habits from peers.
What kind of students do you think would benefit from attending these groups? Are there any students you don't think would benefit from attending these groups?	Boys? Girls? What kind of problems? Rich versus poor
Do you think the program would help girls and boys differently? Why so?	
Do you think the program would help adolescents from rich families and poor families differently? Why so?	
Role of the school environment	
In the future we want to implement this programme in other schools. What kinds of schools will be best for us to work in? Why?	
We are now coming to the end of our discussion. Thank you for talking to us. One last question for you. Is there anything else you would like to tell us about adolescent mental health and your role as school staff?	

IPT Facilitators FGD on CMOs (n=1, 7 facilitators, + 2 clinical supervisors P and P)

THEMES	**PROBES**
Thank you for agreeing to join this group discussion. We would like to hear about your experience of facilitating IPT. In this discussion we want to focus on what it was like for you working with adolescents from different backgrounds and in different schools Please be open with us. There are no right or wrong answers and we will not be offended if you tell us anything negative about IPT. Your experience is very important which is why we are here today. Start with an explanation about and definitions of context, mechanisms and outcomes, using diagrams to help.	
Mechanisms	-
Now I would like to start by talking about mechanisms and how you think IPT helps adolescents.	-
To start with can you tell us which parts of IPT you think are most helpful for reducing depression in adolescents?	Strategies/techniques, sick role, linking mood with problem area, communication analysis, problem solving, linking mood with events, etc.
You mentioned [strategy mentioned in the previous question] works to reduce depression. Now, we would like to understand "**how**" [strategy] reduce depression. Can you explain, how do you think it works? To illustrate this, imagine you take an antacid pill for your stomach pain. It does not magically reduce the pain, it reduces pain through reducing the acidity in your stomach, and that's how it reduces the	Reducing conflict (parent, sibling, friend, partner), feeling more hopeful, feeling more competent (self-efficacy), managing emotions (emotion regulation), support (social support)

pain. Similarly, we assume, [strategy] would not reduce depression directly, but it would reduce depression, because it helps adolescents in some ways. Make a slide/flipchart listing their answers	
Context	
What do you think about this statement: "IPT helps some adolescents but not all"?	
In your experience, who in your IPT groups benefited most?	Why? Males/females, younger/older, poor/rich, adversity, supportive parents, severe depression
Who benefited least?	Same as above
Gender and IPT Context: For boys who do not experience cultural norms or structural violence which impede opportunities to implement new strategies. Mechanism: IPT enables participants to participate in discussions through which they learn strategies to develop hope, reduce conflict, build relationships and improve self-efficacy. Outcome: This generates reductions in depression	
What about IPT is helpful for girls?	Strategies/techniques, sick role, linking mood with problem area, communication analysis, problem solving, linking mood with events, etc.

What are the most helpful parts of IPT for boys?	Same as above
What is not helpful about IPT for girls? Why?	Obtaining consent, attending sessions, participating in discussions, doing experiments at home, sharing problems, giving and receiving support from group members, support from family members
What is not helpful about IPT for boys? Why?	Same as above
Now let's focus on the mechanisms of IPT and whether the same mechanisms are important for boys and girls. What do you think? (show slide/flip chart with mechanisms listed above)	
Age Context: For older (and more cognitively able?) students more cognitively able to consider others' perspectives, learn negotiation skills, develop solutions to interpersonal problems, understand links between events and mood, manage anger and name and express emotions. Mechanism: IPT enables participants to participate in discussions through which they learn strategies to develop hope, reduce conflict, build relationships and improve self-efficacy. Outcome: This generates reductions in depression.	
Now we want to ask about your experience of working with older and younger adolescents. In your opinion, who benefitted more? Older or younger?	Why?
What are the most helpful parts of IPT for younger kids?	Strategies/techniques, sick role, linking mood with problem area,

	communication analysis, problem solving, linking mood with events, etc.
What are the most helpful parts of IPT for older kids?	Same as above
What do younger kids find difficult about IPT?	Obtaining consent, attending sessions, participating in discussions, doing experiments at home, sharing problems, giving and receiving support from group members, support from family members
What do older kids find difficult about IPT?	Obtaining consent, attending sessions, participating in discussions, doing experiments at home, sharing problems, giving and receiving support from group members, support from family members
Now let's focus on the mechanisms of IPT and whether the same mechanisms are important for older and younger kids. What do you think? (show slide/flip chart with mechanisms listed above)	
Financial precarity and adversity Context: For students of higher socioeconomic status not experiencing structural vulnerability or intractable adversity and having more opportunities to implement new strategies. Mechanism: IPT enables participants to participate in discussions through which they learn and implement strategies to develop hope, reduce conflict, build relationships and improve self-efficacy.	

Outcome: This generates reductions in depression	
Now I want you to think about the poorest kids in your groups (i.e, kids with a small house, parents not working, they struggle financially). Do you think IPT helped these kids?	How? Ask for examples
Also, let's now imagine a kid from a rich background (middle-class family, big and nice house, father is a manager somewhere, they are doing fine financially). Do you think IPT helped these kids?	How?
Compared to the poor kids in your group, did the rich kids find it easier or more difficult to reduce their depression? Why?	
Now let's look at the mechanisms you listed earlier (Show slide/flipchart). I want you to think about the IPT mechanisms that kids from poorer households use to reduce their depression. Which of these mechanisms do you think is most important for poor kids? Which of these are important for rich kids?	
Did you have any kids in your groups, **whose basic needs were not met**. For example, kids who had to work to meet their basic needs like food or commute.	How did they do in the groups? Can IPT help these kids? How?
We have been hearing about some **extreme adversity** that kids in your groups experienced, concerning abuse, violence and alcoholic parents. Do you have any experience of kids with these problems?	How did they do in the groups? Can IPT help these kids? How?
You have been interacting a lot with parents. Can you tell us about the ways in which **families supported** adolescents in IPT?	
Do adolescents need a supportive family to benefit from IPT?	Why/Why not? What does a supportive family look like?
School climate and participation in IPT	

Context: For students in schools with school climates characterised by strong student-staff and student-student relationships and norms of mutual respect and social support and thereby having more opportunities to implement new strategies. Mechanism: supportive for implementation or amenable for adolescents to implement ipt skills Outcome: This generates reductions in depression.	
Now we want to focus on schools and how they influence the way in which IPT works. Can you tell me about your experience of schools supportive of the adolescents in your groups?	Staff? Students? What did they do? What was the outcome?
Schools can also be unsupportive. Can you tell me about your experience of unsupportive schools?	Why were they unsupportive? How did this affect the adolescent? What was the outcome?
Considering the mechanisms we listed earlier, in unsupportive schools which of these mechanisms will work? Which mechanisms won't? Why?	
What can schools do to make sure these mechanisms are working?	- Staff, students
Finishing	
We are now coming to the end of our discussion. Thank you for talking to us. One last question for you. Is there anything else you would like to tell us about your experience of IPT?	