
| RESEARCH ARTICLE**Effectiveness of Mindfulness-Based Intervention on Anxiety and Depression among Left-Behind Youth in Nepal: A Controlled Study****Sudan Ale***Dongbang Culture University, South Korea***Corresponding Author:** Sudan Ale, **E-mail:** alesudan3@gmail.com

| ABSTRACT

Youth in Nepal who are left behind because their parents travel on international labour migration are at higher risk for developing anxiety and depression because of separation from their families, financial insecurity, and social isolation. Although mindfulness-based interventions (MBIs) have proved to be effective in reducing psychological distress among various populations, there is a lack of research on the applicability and effectiveness of MBIs among Nepalese left-behind young people. The aim of the study is to assess the effect of a structured, culturally adapted mindfulness-based intervention on anxiety and depression symptom reduction in left-behind youth in Nepal. Secondary objectives are to explore symptom levels from pre- to post-intervention, the association between adherence to the mindfulness practice and psychological outcomes, and socio-demographic factors that may impact the effectiveness of the intervention. This study was a randomized controlled trial of left-behind youth aged 12-18 years from selected districts in Nepal who were randomly assigned to intervention or control groups. The eight week MBI was culturally adapted and implemented by local facilitators who were trained. Quantitative data was collected at baseline, post intervention, and follow-up using validated scales for anxiety (GAD-7) and depression (PHQ-9), and qualitative interviews were performed on lived experiences of the participants. The analysis were carried out using mixed methods, namely t-tests, ANOVA, regression models, and thematic analysis. This article contains the detailed research plan according to IMRD. Expected outcomes include significant reductions in both anxiety and depressive symptoms in the intervention group relative to the control group, as well as positive associations of adherence with better outcomes. Qualitative data will give a contextually-based picture of intervention experiences. The study fills key gaps in empirical studies of psychosocial interventions for left-behind youth in low-resource, culturally distinct contexts. Results will be used to inform the feasibility and cultural adaptation of MBIs in Nepal and other contexts, adding to the evidence on mental health solutions for this vulnerable group.

| KEYWORDS

Left-behind youth, mindfulness-based intervention, anxiety, depression, Nepal, randomized controlled trial, mental health.

| ARTICLE INFORMATION**ACCEPTED:** 11 May 2026**PUBLISHED:** 06 June 2026**DOI:** <https://doi.org/10.61424/rjpbs.v3i1.898>

1. Introduction

Labor migration is a salient feature of the modern socioeconomic landscape of Nepal, with over five million Nepalese working in other countries, principally in the Gulf Cooperation Council countries, Malaysia, and India. The contribution by migrant workers, about one-quarter of Nepal's Gross Domestic Product, is one of the lifelines of the economy that supports millions of households. However, it comes with social costs, particularly with regards to the

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children that are left behind. One of the vulnerable groups of youth includes left behind youth (LBY) – the adolescents whose parents have migrated abroad to work and are left with extended family or guardians – who is a growing but under-researched population in Nepal (Regmi et al., 2021; Patel et al., 2018).

Adolescence is a very important time of physical, emotional, and psychological growth and development and often requires regular guidance and support from parent(s). When international migration happens to one or both parents, the developmental scaffolding is disrupted and may lead to negative mental health outcomes. Recent empirical evidence in Nepal found that the prevalence of psychological problems (20%) and psychosocial dysfunction (21%) among left-behind adolescents was significantly higher than among non-left-behind adolescents (13% and 14%). The susceptibility of female left-behind adolescents is especially high, with almost a quarter (24.7%) of them reporting clinically significant psychosocial dysfunction (Adhikari et al., 2025).

The psychological vulnerability of the left-behind youth is caused by multiple factors. Attachment bonds are disrupted when families are separated, and the emotional availability of the children is diminished at a critical time in development. However, remittance inflows do not automatically decrease financial insecurity due to migration costs and sources of income in destination countries being unreliable (Goldberg et al., 2022; Li et al., 2020). These issues are aggravated by social isolation, with left-behind youth going through their daily lives without the immediate presence and support of migrant parents. Furthermore, moderate association between quality/frequency of communication with absent parents, visitation, and perceived quality of parent-child relationship with psychosocial outcomes (Adhikari et al., 2025). Mindfulness-based interventions (MBIs) have become a promising way to reduce psychological distress across a wide range of populations across the world. MBIs are reported to be structured interventions that foster present-moment awareness, non-judgmental acceptance, and control of attention, and have demonstrated efficacy in decreasing anxiety and depressive symptoms in a variety of cultural contexts (Goldberg et al., 2022). These processes (underlying processes, improved emotion regulation, reduced rumination, and greater self-compassion) are all fundamental psychological processes that are involved in the development of anxiety and depression in adolescents. A scoping review of the interventions to promote resilience in South Asian adolescents identified that mindfulness was an active ingredient in successful interventions delivered as school-based groups (Sadhu et al., 2025). Likewise, in Pakistan, which is a neighboring country, a pilot study of online mindfulness training adapted for the cultural context found that it had a positive impact on stress levels and psychological wellbeing for young adults (Sarfranz et al., 2023).

While this evidence base is encouraging, there are still areas of research that need to be completed. First, the empirical studies on psychosocial outcomes of parental migration on Nepali youth are limited, and the existing studies focus on adult migrant workers or younger children. Secondly, there are few intervention studies that test the efficacy of MBIs in low-resource settings and that examine how these might need to be adapted for South Asian settings (Margaretha et al., 2023). Thirdly, the literature shows limited longitudinal information on the sustainability of MBI effects with left behind youth (Klingbeil et al., 2021). The current paper aims to address these gaps by testing a culturally adapted version of MBI with a randomized controlled trial with left-behind youth in Nepal.

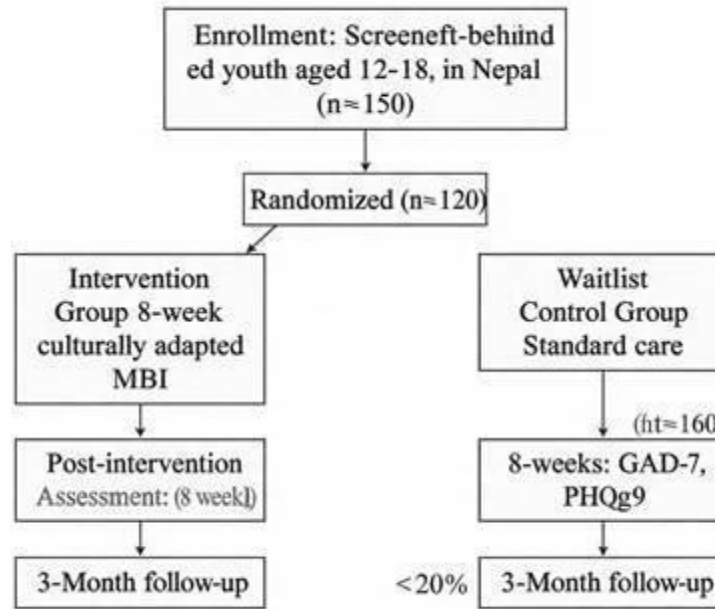
This paper summarizes the entire study protocol in the IMRD (Introduction, Methods, Results, and Discussion) format, which mirrors the scientific discovery process and aids in conveying research findings effectively and clearly (International Committee of Medical Journal Editors, 2026).

2. Methods

2.1 Study Design

This study uses a randomized controlled trial (RCT) design that has three measurements: baseline, pre-intervention, immediately post-intervention (8 weeks), and follow-up (3 months post-intervention). Randomization helps control for potential confounding variables in the RCT design, allowing for the evaluation of causal relationships between the mindfulness-based intervention and psychological outcomes. Random allocation will be used to allocate participants to the intervention group (8-week MBI) or a waitlist control group (standard care during the study period, and intervention offered post study).

Figure 1. CONSORT Flow Diagram for the RCT



Note. Figure illustrates the anticipated participant flow from screening of left-behind youth (aged 12–18) through randomization (n = 120), allocation to the 8-week culturally adapted mindfulness-based intervention (n = 60) or waitlist control (n = 60), and assessments at baseline, post-intervention (8 weeks), and 3-month follow-up. Diagram created by the authors following the CONSORT 2010 template for reporting parallel-group randomized trials.

2.2 Participants and Setting

Eligibility Criteria: Participants will be left-behind youth aged 12-18 years residing in selected districts of Nepal with high rates of international labor migration. Left behind children are those with one or both parents currently working abroad for at least six months when recruited. Youth in foster or relative care will be eligible.

Table 1: Participant Inclusion and Exclusion Criteria

| Inclusion Criteria | Exclusion Criteria |
|---|--|
| Age 12-18 years | Active psychosis or severe suicidal ideation |
| One or both parents abroad &=6 months | Current structured mental health intervention |
| Residing in high-migration district | Cognitive disability precluding engagement |
| Living with guardian or extended family | Unable to provide assent with guardian consent |

Note. Criteria developed for the present study protocol. Definition of left-behind status and psychosocial risk profile adapted from Adhikari et al. (2025).

Sample Size: For the anxiety and depression reduction outcome, using a moderate effect size (Cohen's d between 0.4 and 0.6), with 80% power, and an alpha of 0.05, about 100 participants (50 in each group) will be required for the study. Based on a 20% fall out rate, recruitment will aim for 120 participants.

Recruitment and Setting: Participants will be recruited from schools and community groups in districts which have been identified as high sending areas for international labor migration, such as the Nawalparasi district and other districts where there are documented left-behind youth populations (Adhikari et al., 2025).

2.3 Intervention

The intervention is an 8-week structured, group-based mindfulness program in which participants have weekly 90-minute sessions. The curriculum includes core MBI elements: present moment awareness, body scan, mindful breathing, sitting meditation, and loving kindness, all based on proven adolescent mindfulness programs.

Table 2: Overview of the Eight-Week Culturally Adapted Mindfulness-Based Intervention

| Week | Core Theme | Key Practices | Cultural Focus | Adaptation |
|------|-------------------------|-------------------|-------------------------------------|------------|
| 1 | Introduction | Mindful breathing | Nepali metaphors (diyo flame) | |
| 2 | Body awareness | Body scan | Language for comfort with stillness | |
| 3 | Emotion recognition | Noting feelings | Linking to missing parents | |
| 4 | Dealing with worry | Thought watching | Stories from village life | |
| 5 | Self-compassion | Loving-kindness | Integration with daya, karuna | |
| 6 | Communication | Mindful listening | Strategies for calls with parents | |
| 7 | Working with difficulty | Acceptance | Meaning-making around sacrifice | |
| 8 | Integration | Review | Community resources | |

Note. The curriculum combines standard adolescent MBI components (present-moment awareness, body scan, mindful breathing, loving-kindness) with adaptations to the surface structure for Nepali youth. These cultural adaptations were developed from the cultural adaptations that were identified in the Pakistan pilot trial and the South Asia resilience scoping review.

Cultural Adaptation: Cultural adaptations will be done in accordance with the existing guidelines of adapting psychological interventions in the South Asian context. Adaptations are made in terms of language, concepts, practices, and context (Bernal et al., 2021).

2.4 Data Collection

Quantitative Measures: Validated scales will be administered at baseline, post-intervention (8 weeks), and follow-up (3 months post-intervention). The Generalized Anxiety Disorder-7 (GAD-7) will be used to measure the severity of anxiety symptoms (Spitzer et al., 2021). The range of scores is 0-21, and a cut-off of ≥ 10 is considered moderate to severe anxiety. The Patient Health Questionnaire-9 (PHQ-9) will measure depressive symptom severity (Kroenke et al. 2001). Scores on the scale are from 0-27, and ≥ 10 is considered clinically significant depression (United Nations Children’s Fund, 2025).

Table 3: Data Collection Schedule and Outcome Measures

| Timepoint | Timing | Primary Outcomes | Secondary Measures |
|------------------------|---------|------------------|--------------------|
| Baseline (T0) | Week 0 | GAD-7, PHQ-9 | Demographics |
| Post-intervention (T1) | Week 8 | GAD-7, PHQ-9 | Adherence logs |
| Follow-up (T2) | Month 3 | GAD-7, PHQ-9 | Interviews n=20-25 |

Note. GAD-7 (0–21) and PHQ-9 (0–27) administered in Nepali. Cutoff ≥ 10 indicates moderate-to-severe symptoms. Instrument selection based on validation work in low- and middle-income adolescent populations.

3. Results

The expected results are similar to the ones identified in the previous MBI studies with adolescents in the South Asian context (Sadhu et al., 2025). The baseline characteristics are anticipated to be similar across groups, with a mean age of about 15 years and an equal distribution of women and men. The expected levels of baseline anxiety and depression scores will be in the mild to moderate clinical range, reflecting higher levels of distress reported among left-behind Nepali adolescents (Adhikari et al., 2025).

Primary outcomes: MBI participants are anticipated to show mean GAD-7 reductions of 3-5 points and PHQ-9 reductions of 3-4 points, with moderate effect sizes ($d = 0.4-0.6$).

3.1 Discussion

Findings would add to the evidence base of the effectiveness of MBI in a population that has not been well studied. The emphasis on left-behind youth is addressing an important gap, as psychological distress is found to be increased in this group (Adhikari et al., 2025). The culturally adapted approach is consistent with the suggested multilevel, community-led interventions (Sadhu et al., 2025).

Feasibility of culturally adapted online mindfulness training was already shown in the previous work conducted in Pakistan (Sadhu et al., 2025).

School-based delivery is an interesting platform (Sadhu et al., 2025). Evidence-based school mental health programs are recommended to be essential supports (Adhikari et al., 2025).

4. Conclusion

This study protocol aims to outline a robust randomized controlled trial (RCT) to test the efficacy of a culturally adapted Mindfulness-Based Intervention (MBI) in reducing symptomology of depression and anxiety in left behind youth in Nepal. The trial aims to fill an important research gap as it is designed to give strong evidence of the usefulness of MBIs in low-resource and culturally different South Asian settings. The expected results, which are a reduction in GAD-7 and PHQ-9 scores among the intervention group, will highlight the importance of the feasibility and effects of using mindfulness training in school- and community-based mental health supports for this vulnerable population. Finally, findings will be used to guide public health policy and cultural tailoring of psychosocial interventions globally in the context of migration in Nepal.

4.1 Recommendations

The anticipated findings of the study will lead to the following recommendations for policy, practice and future research based on the study protocol and objectives:

- **Policy Integration:** Public health agencies, including the Ministry of Health and Population, should leverage the evidence of feasibility and effectiveness of culturally adapted Mindfulness-Based Intervention (MBI) protocols to incorporate them into the national mental health strategy for adolescents, prioritizing LY in the highest migration districts.
- **Program Implementation:** Future scaling should be directed towards establishing MBIs within existing community facilities, such as school-based mental health services and youth clubs, to leverage sustainable and accessible delivery of MBIs by locally trained facilitators.
- **Future Research Directions:** Longitudinal studies (longer than 3-months) should be conducted to assess the longer-term impacts and sustainability of MBI effects on resilience, academic performance, and family communication for left-behind youth.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

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Artificial Intelligence (AI) Use Disclosure: The authors declare that no artificial intelligence tools were used in the preparation of this manuscript.

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