

A Meta-Analysis of School-Based Suicide Prevention for Adolescents and Meta-Regressions of Contextual and Intervention Factors

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Abstract : Post-primary school-based suicide prevention (PSSP) is a valuable avenue to reduce suicidal behaviours in adolescents. The aims of this meta-analysis and meta-regression were 1) to quantify the effect of PSSP interventions on adolescent suicide ideation (SI) and suicide attempts (SA), and 2) to explore how intervention effects may vary based on important contextual and intervention factors. This study provides further support to the benefits of PSSP by demonstrating lower suicide outcomes in over 30,000 adolescents following PSSP and mental health interventions and tentatively suggests that intervention effectiveness may potentially vary based on intervention factors. The protocol for this study is registered on PROSPERO (ID=CRD42020168883). Population, intervention, comparison, outcomes, and study design (PICOs) defined eligible studies as cluster randomised studies (n=12) containing PSSP and measuring suicide outcomes. Aggregate electronic database EBSCO host, Web of Science, and Cochrane Central Register of Controlled Trials databases were searched. Cochrane bias tools for cluster randomised studies demonstrated that half of the studies were rated as low risk of bias. The Egger's Regression Test adapted for multi-level modelling indicated that publication bias was not an issue (all ps > .05). Crude and corresponding adjusted pooled log odds ratios (OR) were computed using the Metafor package in R, yielding 12 SA and 19 SI effects. Multi-level random-effects models accounting for dependencies of effects from the same study revealed that in crude models, compared to controls, interventions were significantly associated with 13% (OR=0.87, 95% confidence interval (CI), [0.78,0.96], Q18 =15.41, p=0.63) and 34% (OR=0.66, 95%CI [0.47,0.91], Q10=16.31, p=0.13) lower odds of SI and SA, respectively. Adjusted models showed similar odds reductions of 15% (OR=0.85, 95%CI[0.75,0.95], Q18=10.04, p=0.93) and 28% (OR=0.72, 95%CI[0.59,0.87], Q10=10.46, p=0.49) for SI and SA, respectively. Within-cluster heterogeneity ranged from no heterogeneity to low heterogeneity for SA across crude and adjusted models (0-9%). No heterogeneity was identified for SI across crude and adjusted models (0%). Pre-specified univariate moderator analyses were not significant for SA (all ps < 0.05). Variations in average pooled SA odds reductions across categories of various intervention characteristics were observed (all ps < 0.05), which preliminarily suggests that the effectiveness of interventions may potentially vary across intervention factors. These findings have practical implications for researchers, clinicians, educators, and decision-makers. Further investigation of important logical, theoretical, and empirical moderators on PSSP intervention effectiveness is recommended to establish how and when PSSP interventions best reduce adolescent suicidal behaviour.

Keywords : adolescents, contextual factors, post-primary school-based suicide prevention, suicide ideation, suicide attempts

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