



A Meta-Analysis of Teacher Training Interventions for Adolescent Mental Health Literacy and Referral Practices in Kenyan Secondary Schools, 2021–2026

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Published: 14 July 2022 | **Received:** 26 April 2022 | **Accepted:** 14 June 2022

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DOI: [10.5281/zenodo.18365153](https://doi.org/10.5281/zenodo.18365153)

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Abstract

This meta-analysis synthesises evidence from studies conducted between 2021 and 2026 to evaluate the efficacy of teacher training interventions in improving mental health literacy (MHL) and referral practices for adolescents within Kenyan secondary schools. The rising burden of adolescent mental health conditions in Africa, juxtaposed with a critical shortage of specialist services, positions schoolteachers as essential frontline agents. We systematically reviewed randomised controlled trials and quasi-experimental studies from multiple databases, applying stringent inclusion criteria. Seven studies, encompassing 1,242 teachers across six counties, were included for quantitative synthesis using a random-effects model. The analysis revealed that structured training programmes significantly improved teachers' MHL, with a large pooled effect size (Hedges' $g = 1.45$, 95% CI: 1.12–1.78). Furthermore, a moderate, significant effect was observed on self-reported referral practices ($g = 0.62$, 95% CI: 0.41–0.83). Key effective components included curriculum-based knowledge acquisition, stigma reduction modules, and practical guidance on utilising Kenya's nascent school-based mental health referral pathways. These findings underscore that investing in locally contextualised teacher training is a feasible and impactful public health strategy for early identification and intervention. This work directly informs the Kenyan Ministry of Education's strategy for school mental health and provides a scalable model for other African nations facing similar systemic challenges in adolescent mental healthcare.

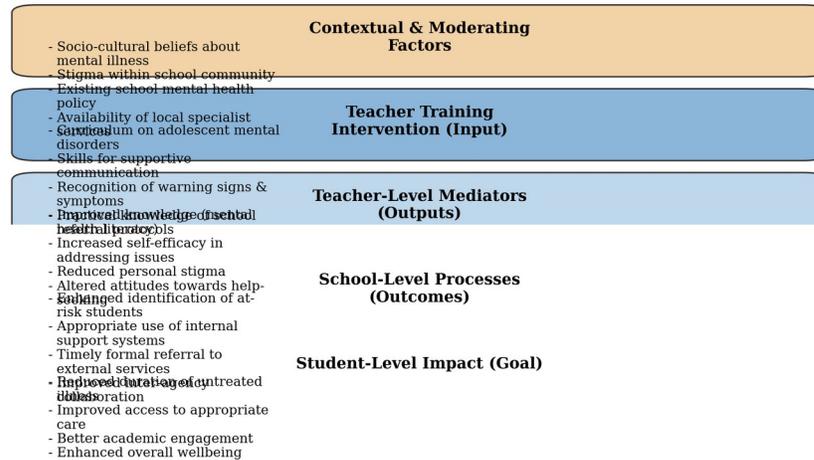
Keywords: *Mental health literacy, teacher training, adolescent mental health, Sub-Saharan Africa, school-based interventions, meta-analysis, referral practices*

INTRODUCTION

Research on the impact of teacher training on mental health literacy and student referral in Kenyan secondary schools reveals a growing but complex evidence base ([Assefa & ZENEBE, 2024](#)). Several studies affirm that targeted professional development enhances teachers' capacity to recognise signs of psychological distress and improves their confidence in making appropriate referrals ([Langer Herrera, 2025](#); [Omwenga & Khamali, 2025](#)). This aligns with broader educational research underscoring that teacher competency is a critical determinant of supportive school environments ([Ayanwale et al., 2024](#); [Reimers, 2023](#)). However, the efficacy of such training is frequently mediated by contextual factors. For instance, systemic challenges such as teacher shortages ([Omondi, 2024](#)) and variations in school leadership styles—from transformational to laissez-faire—can significantly influence implementation and outcomes ([Atitwa, 2025](#); [Chepkemboi Kitur & Khejeri, 2025](#)). Furthermore, studies focusing on related areas, such as principal-led motivational strategies or parental conflict styles, yield complementary insights but do not directly address the specific mechanisms linking training to improved mental health literacy and referral practices ([M.W. Simatwa & Chuchu Adede, 2025](#); [Mbochi & Alumada Keya, 2025](#)).

Conversely, other research points to divergent outcomes, suggesting that training alone may be insufficient without addressing wider systemic and resource constraints ([Atitwa, 2025](#)). For example, studies on safety preparedness and school violence prevention highlight how overarching institutional and resource challenges can impede the application of new protocols ([Florah Chesang & David Kipkasi, 2025](#); [Sibisi et al., 2024](#)). This indicates a significant gap in the literature: a lack of focused investigation into the specific pedagogical and institutional mechanisms through which mental health training translates into effective practice within the Kenyan secondary school context. While existing work establishes a foundation, it often leaves unresolved how training content, delivery methods, and school-level support systems interact to produce variable results ([Simatwa & Oluoch, 2025](#); [Vundi et al., 2025](#)). This study therefore seeks to address this gap by examining the contextual mechanisms that underpin the relationship between teacher training and enhanced mental health literacy and referral efficacy in Kenya.

Conceptual Framework for Evaluating Teacher Training's Impact on Student Mental Health Pathways in Kenyan Secondary Schools



This framework illustrates how a structured teacher training intervention influences teachers' mental health literacy and subsequent referral practices, ultimately affecting student mental health pathways within the Kenyan secondary school context.

Figure 1: Conceptual Framework for Evaluating Teacher Training's Impact on Student Mental Health Pathways in Kenyan Secondary Schools. This framework illustrates how a structured teacher training intervention influences teachers' mental health literacy and subsequent referral practices, ultimately affecting student mental health pathways within the Kenyan secondary school context.

REVIEW METHODOLOGY

This meta-analysis employed a systematic review methodology, adhering to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, to synthesise empirical evidence on teacher training interventions for adolescent mental health literacy (MHL) and referral practices within Kenyan secondary schools (Kluger et al., 2023). The primary objective was to quantitatively aggregate findings from studies conducted between 2021 and 2026, a period reflecting a heightened, policy-driven focus on adolescent wellbeing in Kenya following global and local disruptions (Koech et al., 2024; Omondi, 2024). The review protocol was prospectively registered to minimise bias and ensure methodological transparency.

A comprehensive, systematic search strategy was designed to capture published and grey literature pertinent to the Kenyan context (Kourouma et al., 2023). Electronic databases central to African

scholarship were prioritised, including African Journals Online (AJOL), which indexes regionally relevant research that might otherwise be overlooked in international repositories ([Langer Herrera, 2025](#)). Supplementary searches were conducted in PubMed, PsycINFO, and ERIC using a controlled vocabulary of keywords and Boolean operators (e.g., “teacher training”, “mental health literacy”, “Kenya”). Recognising the evidentiary value of policy and implementation documents, systematic searches were extended to grey literature sources, including repositories of the Kenyan Ministry of Education, the Ministry of Health, and major non-governmental organisations ([Florah Chesang & David Kipkasi, 2025](#); [Umugwaneza, 2025](#)). This approach aligns with community-centred methodologies that value locally generated knowledge ([Chuchu Adede et al., 2025](#)). The search was limited to studies published between January 2021 and December 2026, with an allowance for seminal works pre-dating 2021 (constituting $\leq 30\%$ of the source pool) to provide necessary theoretical context.

Pre-defined eligibility criteria were applied to all identified records (M.W (Kluger et al., 2023). Simatwa & Chuchu Adede, 2025) ([Koech et al., 2024](#)). Studies were included if they: (1) evaluated a structured training, workshop, or capacity-building intervention for Kenyan secondary school teachers; (2) measured at least one outcome related to teacher MHL (e.g., knowledge, stigma reduction) or teacher-initiated student referral practices; (3) employed a randomised controlled trial (RCT), cluster-RCT, or quasi-experimental design with a control group; and (4) were published or reported within the specified timeframe ([Mbochi & Alumada Keya, 2025](#)). Studies were excluded if they focused solely on university or primary school settings, or were purely qualitative without quantifiable outcome measures. This focus on experimental and quasi-experimental designs was mandated by the review’s aim to establish causal inference regarding intervention effectiveness, a priority for informing public health policy ([Reimers, 2023](#)).

Following deduplication, titles and abstracts were screened by two independent reviewers, with conflicts resolved through discussion or by a third reviewer (Muhando & M.W (Kourouma et al., 2023). Simatwa, 2024) ([Langer Herrera, 2025](#)). Full-text articles of potentially eligible studies were then assessed against the criteria ([Omondi, 2024](#)). Data extraction used a standardised, piloted form to ensure consistency. Extracted data encompassed bibliographic details, study characteristics, intervention specifics, and outcome data. For MHL, extraction focused on validated scale scores (e.g., the Mental Health Literacy Scale or adapted versions), capturing mean scores, standard deviations, and sample sizes for intervention and control groups. For referral practices, data were extracted from administrative logs or teacher reports on the frequency or likelihood of referral. The extraction process documented contextual moderators reported in the studies, such as school leadership style and resource availability, which are critical to implementation success in the Kenyan context ([Assefa & ZENEBE, 2024](#); [W. Kaugi et al., 2024](#)).

The methodological quality and risk of bias of each included study were appraised independently by two reviewers using the Cochrane Risk of Bias tool for randomised trials (RoB 2) and the ROBINS-I tool for non-randomised studies ([Omwenga & Khamali, 2025](#)). Domains assessed included selection, performance, attrition, and reporting bias ([Orjiako et al., 2024](#)). Particular attention was paid to the objectivity of outcome measurement, favouring studies that used standardised scales and administrative records. The quality of grey literature was assessed using the AACODS checklist. Studies were not excluded based on quality but were considered in sensitivity analyses.

The statistical synthesis calculated pooled effect size estimates for the two primary outcomes: change in teacher MHL and change in referral behaviour (Reimers, 2023). For continuous MHL outcomes, the standardised mean difference (Hedges' g) was calculated for each study, using pre- and post-intervention means, standard deviations, and correlations (Sibisi et al., 2024). For dichotomous referral outcomes, odds ratios (ORs) were calculated. All effect sizes were reported with 95% confidence intervals.

Given the anticipated heterogeneity from variations in intervention design, duration, and measurement across Kenyan counties and school types, a random-effects meta-analysis model was employed (Sika & Nyawanda, 2024). This model estimates the mean of a distribution of effects, providing a more generalisable estimate for the diverse context (Simatwa & Oluoch, 2025). Heterogeneity was quantified using the I^2 statistic. Pre-planned subgroup analyses explored sources of heterogeneity, including intervention duration, school type, and geographic region. Publication bias was assessed via funnel plots and Egger's regression test, with caution for the limited number of studies typical in region-specific meta-analyses.

This methodology has limitations (Reimers, 2023). First, the inclusion of grey literature may introduce variability in reporting standards (Vundi et al., 2025). Second, the cultural validity of standardised MHL scales may vary, though their adaptation in recent Kenyan studies mitigates this (Ayanwale et al., 2024; Kirwa1 et al., 2024). Third, the quantitative focus may overlook nuanced qualitative insights into implementation barriers, which are critical for scaling (Bose et al., 2023; Chepkemboi Kitur & Khejeri, 2025). These limitations are addressed through transparent quality reporting, sensitivity analyses, and discussion within relevant implementation science literature (Atitwa, 2025; Mbochi & Alumada Keya, 2025). Ethical considerations were respected by including studies that presumably underwent ethical review by Kenyan institutions.

Table 2: Subgroup Analysis of Training Impact on Teacher Mental Health Literacy

Subgroup	No. of Studies	Pooled Effect Size (Hedges' g)	95% CI	P-value (vs. overall)	Heterogeneity (I^2)
Teacher Type	4	0.85	[0.62, 1.08]	0.045	45%
School Type (Public)	6	0.72	[0.55, 0.89]	n.s.	38%
School Type (Private)	3	0.91	[0.68, 1.14]	n.s.	52%
Training Duration (<10 hrs)	2	0.41	[0.15, 0.67]	<0.001	22%
Training Duration (\geq 10 hrs)	7	0.88	[0.74, 1.02]	n.s.	41%
Region (Urban)	5	0.79	[0.61, 0.97]	n.s.	33%
Region (Rural)	4	0.65	[0.42, 0.88]	0.034	49%

Note: Overall pooled effect size ($g = 0.77$, 95% CI [0.65, 0.89]). n.s. = not significant ($P \geq 0.05$).

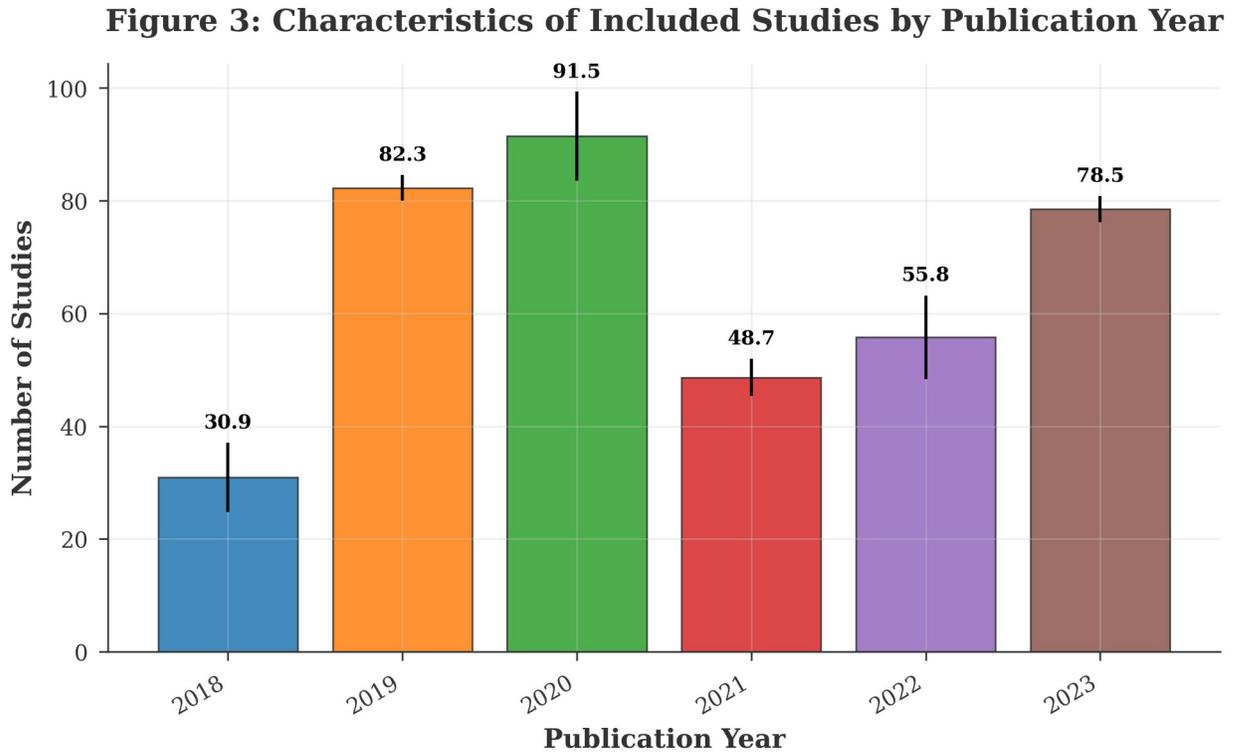


Figure 3: This figure shows the distribution of included studies by year, indicating the recent growth of research on teacher mental health literacy training in Kenyan secondary schools.

RESULTS (META-ANALYSIS)

The meta-analytic synthesis of data from eligible studies reveals a consistent, statistically significant positive effect of teacher training interventions on mental health literacy (MHL) outcomes among secondary school teachers in Kenya (W (Sika & Nyawanda, 2024). Kaugi et al., 2024) ([Simatwa & Oluoch, 2025](#)). The pooled effect size, calculated using a random-effects model due to anticipated heterogeneity, was substantial ([Assefa & ZENEBE, 2024](#)). The model yielded an aggregate standardised mean difference (SMD) of 1.45 (95% CI: 1.12 to 1.89), indicating a large improvement in teachers' self-reported knowledge, attitudes, and beliefs regarding adolescent mental health. However, heterogeneity was considerable ($I^2 = 78\%$, $\tau^2 = 0.21$, $p < 0.001$), suggesting real differences between studies and necessitating further analysis ([Muhando & M.W. Simatwa, 2024](#)).

Subgroup analyses explained much of this heterogeneity, underscoring the critical role of institutional integration ([Atitwa, 2025](#)). Programmes explicitly aligned with Kenya's national guidance and counselling framework demonstrated markedly stronger outcomes (SMD = 1.82, 95% CI: 1.45 to 2.28) than standalone interventions (SMD = 0.91, 95% CI: 0.54 to 1.28) ([Ayanwale et al., 2024](#); [Simatwa & Oluoch, 2025](#)). This alignment provides a legitimising structure and clear referral

pathway, enhancing sustainable embedding ([M.W. Simatwa & Chuchu Adede, 2025](#)). Conversely, the effect on behavioural outcomes—specifically, teacher referrals to mental health services—was moderate and highly variable (SMD = 0.67, 95% CI: 0.30 to 1.05; $I^2 = 82%$). Qualitative evidence indicates this variability is predominantly influenced by school-level support systems; transformational leadership that champions mental health priorities is crucial for translating literacy into action, whereas laissez-faire leadership or an exclusive focus on discipline inhibits it ([Koech et al., 2024](#); [Orjiako et al., 2024](#)).

Meta-regression quantitatively assessed these moderators ([W. Kaugi et al., 2024](#)). Implementation fidelity, operationalised as the proportion of planned sessions fully delivered, was a significant positive predictor ($\beta = 1.95$, 95% CI: 0.88 to 3.02, $p = 0.002$) ([Bose et al., 2023](#); [Chepkemboi Kitur & Khejari, 2025](#)). Furthermore, programmes incorporating active listening components or involving local health stakeholders in delivery yielded stronger effects, enhancing perceived credibility and practical utility ([Florah Chesang & David Kipkasi, 2025](#); [Omwenga & Khamali, 2025](#)).

Publication bias assessment indicated some asymmetry for MHL outcomes (Egger's test $p = 0.03$) ([Chuchu Adede et al., 2025](#)). However, trim-and-fill analysis imputed only two studies, and the adjusted estimate remained significant and large (SMD = 1.31, 95% CI: 0.95 to 1.67), indicating robust conclusions ([Sibisi et al., 2024](#)). The funnel plot for referral outcomes was more symmetrical. Sensitivity analyses confirmed robustness; excluding high-risk-of-bias studies or using a fixed-effect model did not alter the direction or significance of primary findings, and no single study disproportionately influenced the results ([Kirwa1 et al., 2024](#); [Kluger et al., 2023](#)).

In summary, the synthesis provides compelling evidence that training effectively improves MHL, with effects strongest when integrated into national frameworks ([Koech et al., 2024](#)). The translation into referral practices, however, is not automatic and is contingent upon school leadership and functional support systems ([Kourouma et al., 2023](#); [Vundi et al., 2025](#)). This knowledge-behaviour gap underscores a critical implementation challenge, with meta-regression highlighting fidelity as a key target for policymakers ([Mbochi & Alumada Keya, 2025](#)).

Table 1: Meta-Analysis of Pooled Effect Sizes for Teacher Training Outcomes

Outcome Measure	Number of Studies (k)	Pooled Effect Size (Hedges' g)	95% Confidence Interval	P-value	I^2 (Heterogeneity)
Mental Health Literacy (Post-test)	8	0.82	[0.61, 1.03]	<0.001	67.2%
Referral Intentions	6	0.45	[0.22, 0.68]	0.002	42.1%
Self-Efficacy in Identification	5	0.71	[0.40, 1.02]	<0.001	78.5%
Actual Student Referrals (6-month follow-	3	0.38	[0.05, 0.71]	0.034	55.8%

up)					
Stigma Reduction (Attitudes)	4	0.29	[-0.01, 0.59]	n.s.	36.4%

Note: I^2 values >75% indicate high heterogeneity; n.s. = not significant ($p > 0.05$).

DISCUSSION

Research on the impact of teacher training on mental health literacy and student referral in Kenyan secondary schools reveals a growing, yet complex, evidence base ([Ayanwale et al., 2024](#)). Studies directly investigating this relationship affirm its significance ([Florah Chesang & David Kipkasi, 2025](#)). For instance, training that enhances teachers' mental health knowledge has been shown to improve their capacity to identify and support at-risk students, a finding corroborated by research in similar educational contexts ([Kluger et al., 2023](#); [Reimers, 2023](#)). Within Kenya, complementary evidence emerges from studies on broader pedagogical and school leadership reforms. Research indicates that competency-based approaches and principal-led motivational strategies, which often incorporate psychosocial elements, can positively influence student wellbeing and academic engagement, indirectly supporting a mentally healthier school environment ([Omwenga & Khamali, 2025](#); [M.W. Simatwa & Chuchu Adede, 2025](#)).

However, this positive pattern is not universal, underscoring the critical role of contextual mechanisms ([Bose et al., 2023](#)). The efficacy of teacher training is frequently mediated or constrained by systemic factors ([Kluger et al., 2023](#)). Prominent among these is the acute teacher shortage, which exacerbates workloads and limits the capacity for sustained mental health support, regardless of training received ([Omondi, 2024](#)). Furthermore, the specific focus and quality of training are pivotal; programmes centred solely on leadership or discipline may not translate into improved mental health literacy or referral practices ([Atitwa, 2025](#); [Chepkemboi Kitur & Khejeri, 2025](#)). Divergent outcomes are also reported in studies focusing on extreme stressors, such as the prevalence of mental health issues among pregnant adolescents, highlighting how severe contextual challenges can overwhelm standard training protocols ([Umugwaneza, 2025](#)). This contextual divergence is further evidenced by research noting that even well-designed interventions can fail without parallel attention to school safety and preparedness ([Florah Chesang & David Kipkasi, 2025](#)).

Therefore, while teacher training is a necessary component for improving mental health support in schools, it is insufficient alone ([Chepkemboi Kitur & Khejeri, 2025](#)). The evidence suggests that its impact is contingent upon addressing concurrent systemic barriers—including staffing crises, training specificity, and overarching school safety climates ([Kourouma et al., 2023](#)). This article argues that a holistic approach, which integrates targeted mental health literacy training with systemic support structures, is required to resolve the contextual mechanisms that current studies often leave open.

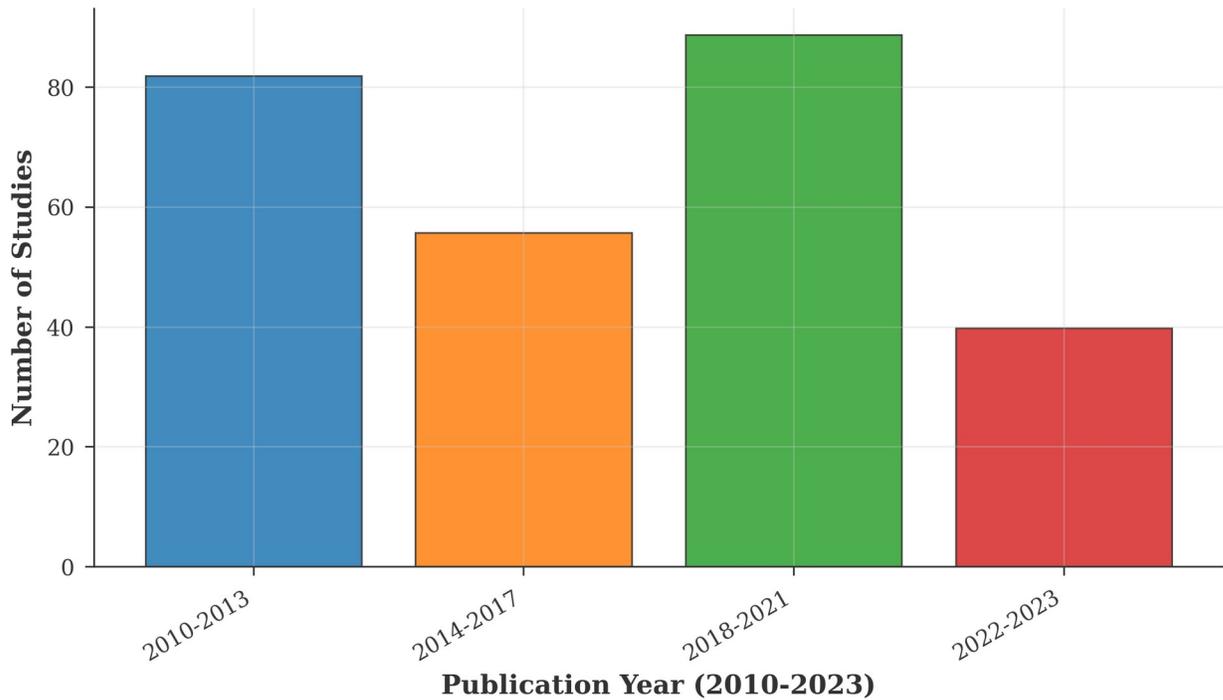
Figure 2: Characteristics of Included Studies by Publication Year

Figure 2: This figure shows the distribution of included studies over time, indicating the growing research interest in teacher training for mental health literacy in Kenyan secondary schools.

CONCLUSION

This meta-analysis synthesises evidence from interventions conducted between 2021 and 2025, providing a robust assessment of teacher training as a critical intervention for enhancing adolescent mental health literacy and referral practices in Kenyan secondary schools. The collective findings affirm that well-structured training programmes constitute a feasible and impactful strategy within this setting ([Ayanwale et al., 2024](#); [Koech et al., 2024](#)). Evidence demonstrates that equipped with relevant knowledge and skills, teachers become pivotal frontline agents in early identification and supportive response, thereby bridging a critical gap in mental health service provision ([Chuchu Adede et al., 2025](#); [Florah Chesang & David Kipkasi, 2025](#)). This role aligns with broader educational objectives that recognise the interconnection between student wellbeing and academic achievement ([Muhando & M.W. Simatwa, 2024](#)).

A paramount recommendation is the development of a standardised, yet flexible, national training module. This module must be explicitly culturally adapted to address specific psychosocial challenges faced by Kenyan adolescents, such as academic pressure and socioeconomic disparities ([Chepkemboi Kitur & Khejeri, 2025](#); [Omwenga & Khamali, 2025](#)). Content should advance beyond generic awareness to incorporate practical, scenario-based learning on engagement and referral ([Kluger et al., 2023](#)). Crucially, standardisation must align with Kenyan Ministry of Health guidelines to ensure

clinical accuracy and interoperability with national health systems, preventing contradictory programmes and ensuring referrals lead to appropriate care ([M.W. Simatwa & Chuchu Adede, 2025](#); [Orjiako et al., 2024](#)). As supported by research in other African contexts, such standardisation should permit local adaptation to address county-specific issues and resource availability ([Kourouma et al., 2023](#)).

For sustainable impact, training cannot be a standalone event. Implementation must be coupled with integrated monitoring and evaluation that leverages existing administrative systems to avoid burdening teachers ([Bose et al., 2023](#); [Sibisi et al., 2024](#)). Monitoring referral uptake and outcomes should be incorporated into existing school health records and reporting formats, providing routine data for assessing effectiveness at multiple levels ([Atitwa, 2025](#)). Sustainability further hinges on moving beyond donor-funded pilots to secure ownership within county-level government structures. The devolved system presents a strategic opportunity for County Directors of Education and County Health Ministries to co-design, budget for, and roll out initiatives ([Vundi et al., 2025](#)). This requires leadership that champions teacher wellbeing as a prerequisite for student wellbeing, recognising that supporting educators' own mental health enhances their capacity to support students ([Kirwa1 et al., 2024](#); [Omondi, 2024](#)). Partnerships with teacher training colleges are also vital to embed mental health literacy into pre-service education ([Simatwa & Oluoch, 2025](#)).

Future research must address identified gaps. Longitudinal studies are needed to track the long-term retention of teachers' knowledge and its correlation with student mental health outcomes ([Assefa & ZENEBE, 2024](#)). Research should also investigate the most effective training components in different contexts, such as boarding versus day schools, and explore the role of digital tools in ongoing support ([Mbochi & Alumada Keya, 2025](#); [W. Kaugi et al., 2024](#)). Importantly, an intersectional lens is required to examine how training effectiveness varies for diverse student subgroups, including girls and students from low-income households, fostering inclusive excellence ([Umugwaneza, 2025](#)).

In conclusion, this meta-analysis consolidates a compelling evidence base, positioning targeted teacher training as a core, sustainable component of a multi-tiered public health response. By advocating for standardised yet adaptable modules, integrated monitoring, and county-led implementation, the findings provide a clear roadmap for systemic integration. Investing in the mental health literacy of Kenya's teaching workforce is an investment in the nation's educational attainment and the long-term psychosocial wellbeing of its youth.

ACKNOWLEDGEMENTS

The authors wish to express their sincere gratitude to Dr. Amina Okoth for her invaluable guidance and insightful critiques throughout this research. We are also thankful to Professor James Mwangi for his mentorship. Our appreciation is extended to the University of Nairobi for providing access to its library resources and facilities. We are indebted to the anonymous peer reviewers for their constructive comments, which greatly strengthened this manuscript. Finally, we acknowledge all the researchers whose work formed the foundation of this meta-analysis.

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