

Perceptions, Attitudes, and Knowledge of Teachers Serving as Mental Health Lay Counselors in a Low and Middle Income Country: A Mixed Methods Pragmatic Pilot Study

Christina M Cruz (✉ christina_cruz@med.unc.edu)

University of North Carolina at Chapel Hill <https://orcid.org/0000-0003-4466-1487>

Molly M Lamb

Colorado School of Public Health

Priscilla Giri

Darjeeling Ladenla Road Prerna

Juliana Vanderburg

University of North Carolina at Chapel Hill

Peter Ferrarone

Colorado School of Public Health

Surekha Bhattarai

Darjeeling Ladenla Road Prerna

Aileen Giardina

Broadleaf Health and Education Alliance

Karen Hampanda

Colorado School of Public Health

Bradley N Gaynes

University of North Carolina at Chapel Hill

Michael Matergia

Broadleaf Health and Education Alliance

Research

Keywords: teacher, lay counselor, task-shifting, child mental health, school mental health, perceptions, attitude, knowledge, LMIC

Posted Date: October 30th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-98098/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Background: Low and middle-income countries (LMICs) have a dire need for trained mental health professionals, especially for children. While teachers' child development expertise potentially positions them to serve as lay counselors, they have rarely delivered indicated child mental health care in LMICs. As part of assessing the feasibility of teachers serving as lay counselors, we explored teachers' perceptions about serving as mental health lay counselors on top of typical professional duties and their attitudes towards and knowledge about mental health after serving as lay counselors.

Methods: In 2018, 20 primary school teachers from five rural, low cost private schools in Darjeeling, India, received training and supervision to serve as lay mental health counselors in their classrooms. Using mixed methods, we measured teacher mental health attitudes and knowledge and perceptions of serving as lay counselor with study-specific assessments and through semi-structured interviews. Pre-training, post-training, and post-intervention mean scores were compared using paired *t* tests. Post-intervention interviews were coded for teachers' mental health attitudes and knowledge and perceptions of serving as lay counselor.

Results: Interviews revealed teachers qualitatively having more inclusive mental health attitudes, expressing a willingness to serve as lay counselor, and retaining mental health knowledge as applicable to what may be used during instructional time. By contrast, quantitatively, teachers' attitudes appeared to become more inclusive on the study-specific survey pre versus post-training, but reverted to pre-training levels post-intervention. Teachers' mental health counseling knowledge on the quantitative study-specific assessment did not change pre-training versus post-training versus post-intervention.

Conclusions: Training, supervision, and serving as lay counselors led to teachers' willingness to serve as lay counselors. Teachers served as lay counselors by incorporating therapeutic techniques into their student interactions during class time and as part of their typical instruction, not through delivering one-on-one office-like traditional care. Their changes in attitudes and knowledge reflected those expected within an "education as therapy" emerging system of care. Quantitative measures of knowledge and attitude changes did not capture these nuanced changes.

Trial Registration: The parent feasibility trial was registered on January 01, 2018 with Clinical Trials Registry – India (CTRI), reg. no. CTRI/2018/01/011471, ref. no. REF/2017/11/015895.

http://ctri.nic.in/Clinicaltrials/pdf_generate.php?

[trialid=21129&EncHid=&modid=&compid=%27,%2721129det%27](http://ctri.nic.in/Clinicaltrials/pdf_generate.php?trialid=21129&EncHid=&modid=&compid=%27,%2721129det%27)

Background

Addressing the care gap for children in need of mental health services is a crucial global health challenge. In India, considered a low and middle income country (LMIC) and the site of the study described here, fewer than 1% of children in need of mental health services receive it, a substantial gap; by contrast, in high income countries (HICs), 20% of children in need of mental health services receive them. (1–4)

The lack of trained mental health personnel is a significant barrier to increasing access to children's mental health care in LMICs. (5) Alternative models of mental health care, such as task-shifting, can play an important role in bridging the care gap. (5) In a task-shifting model, professionals train and coach non-accredited individuals to deliver therapy. (6) Task-shifting mental health care to lay individuals in LMICs has been repeatedly shown to improve outcomes of adolescents and adults with mental illness. (6–8) Delivering task-shifted mental health care to children, however, has proven to be challenging. (9) Mental health care delivered to children must account for their developing cognitive and emotion-regulation capabilities, requiring nuance, finesse, and expertise. (9)

Teachers in LMICs may be well-suited to be lay counselors who deliver indicated child mental health care. (10) They are the professionals with proficiency in child development who have the potential to impact child behavior through daily, consistent contact with children, and the ability to address the mental health needs of children in real time. (10–12) Further, schools are nearly ubiquitous in LMICs, and school attendance rates have significantly improved since 2000, increasing the potential reach of teacher-delivered mental health care. (9, 13) Moreover, early evidence in HICs points to the ability of teachers to serve as narrow-spectrum lay counselors, demonstrating that trained teachers are able to use a small subset of mental health techniques to address specific symptoms related to Conduct Disorder. (14, 15)

To date, however, teachers' roles in child mental health care globally have been largely limited to mental health promotion or prevention centered on delivering classroom lesson plans to whole classes. (15) Teachers' roles in delivering care may currently be narrow as generally they: (1) feel under-trained to teach and work with students with mental health concerns; (2) are overburdened with their education duties and may lack the bandwidth to take on counseling tasks; and (3) may not view students' mental health as their responsibility. (10, 16)

Notably, teachers who receive appropriate training and supervision and acquire mental health experience in mental health promotion or prevention interventions in HICs have made gains in mental health knowledge, have had more positive attitudes towards mental health, and have improved self-efficacy in teaching students who need mental health support. (14, 15, 17) However, these studies largely involve teachers delivering prescribed, whole class lessons and their perspectives may differ from teachers who deliver indicated care to their students individually, a notable difference in duties. (8, 15) Moreover, HIC findings may not be generalizable to LMIC settings given differing levels of resources to support such programs. (8, 15)

No published studies exist exploring teachers' perceptions of serving as lay counselors and their knowledge of and attitudes towards mental health after training, supervision, and being a lay counselor for their school-aged students. (8) The paucity of studies is in part due to few published programs existing in which teachers act as lay counselors globally. (8) The one group that has studied teacher-delivery of youth mental health care for common mental disorders in an LMIC did not explore teacher knowledge of and attitudes towards mental health or perceptions of acting as lay counselor after playing this role. (18) These aspects of teachers' experiences with student mental health may crucially underlie

their ability and willingness to serve as lay counselor as part of filling the child mental health care gap. If these aspects remained unexplored, teachers may remain untapped as human resources for filling the care gap despite their unique capabilities to do so.

In this mixed methods study, we assess teacher knowledge of mental health after serving as lay counselors to their students, teacher attitudes towards mental health, and teacher perceptions of serving as lay mental health counselor. We examine crucial individual level factors that may underlie whether teachers can deliver indicated child mental health care in LMICs. We hypothesized that teachers would experience improvements in knowledge with training, supervision, and experience delivering care. Secondly, we hypothesized that teacher attitudes towards mental health would become more inclusive as evidenced by teachers demonstrating an understanding of the behaviors of children with mental illness based on psychological principles. Finally, we sought to explore teacher experiences and perceptions of serving as lay counselor as part of a novel children's mental health care model.

Methods

Study design

This analysis sought to complete a secondary aim within a 2018 feasibility study of a teacher-led task-shifting system of children's mental health care in low cost private (LCP) primary schools of the Darjeeling Himalayas, West Bengal, India. Using a pilot pragmatic design, we assessed for the feasibility of teachers delivering mental health care to their students, the subject of another manuscript submitted for review. Throughout this study, we collected data, as described later, to address the secondary aim of understanding teacher knowledge of and attitudes towards mental health after being a lay counselor as well as their perceptions of being a lay counselor, the basis of this analysis.

Setting

Darjeeling's population of approximately 800,000 people is scattered in rural villages nestled in the Himalayan mountains. (19) The majority of residents are ethnically Nepali, a minority group within the State of West Bengal. (19) Daily wages are 120 Indian rupees (INR) (approximately \$1.68 United States dollars (USD)) for tea plantation laborers, who make up the majority of workers (77%). (20, 21) While a Darjeeling-specific prevalence of child mental illness has not been published, prevalence rates in a nearby rural area, also in West Bengal, estimated child psychiatric morbidity at 33%. (2) Unpublished observations from the authors' needs assessment in 2017 revealed that there are 3 counselors and 1 general psychiatrist to address the mental health needs of approximately 100,000 youth.

Participants

To target schools enrolling children with poor access to care, LCP schools were considered eligible if they were located in rural Darjeeling, did not receive aid from the government, enrolled students from families with average daily incomes of \$10 USD or less, and had total annual fees of \$180 USD or less. Of the 17 eligible schools contacted, 11 agreed to participate and 5 were chosen based on further inclusion criteria

of having a population of 50 or more students to more accurately approximate prevalence rates of the general population. From these 5 rural LCP schools, 327 participants were enrolled. Eligible teachers were employed at enrolled schools, had 1 or more years of teaching experience (to avoid their perceptions and capabilities being tied to learning how to perform their primary duties as a teacher), were 18 years or older, and were not being investigated for or convicted of child maltreatment.

The full study sample consisted of 19 teachers, 36 children selected for mental health support, 36 parents or guardians, and the remaining 236 children within teachers' classrooms not selected for mental health support. Twenty-three teachers consented to participate in the study and completed the training, and 19 completed the full activities of the intervention. Completed mental health attitudes surveys from 15 teachers, completed mental health knowledge summative assessments from 14 teachers, and completed semi-structured interviews with 17 teachers were analyzed.

Procedures

Teacher training consisted of 10 days of learning to deliver evidence-based children's mental health care, including identifying children in need of mental health services, observing children's behaviors through a functional behavior assessment, creating iterative behavior plans, and delivering Cognitive Behavior Play Therapy (CBPT) to students as part of the behavior plan. (22) After training and under the guidance of study staff, each teacher selected 2 students to work with whom they felt were in most need of mental health services. This pragmatic limitation was based on teacher feedback during intervention piloting where they expressed that 2 students each was a feasible caseload given their other responsibilities. Teachers spent 2–3 months observing students and completing a functional behavior assessment on them. Afterwards, they developed a behavior plan to guide their interactions with students, including changing classroom environments, setting limits, and completing CBPT work. They worked therapeutically with the students for the remainder of the school year (~ 6–8 months). A psychiatric social worker with child mental health expertise delivered the training, collected data on teacher mental health knowledge and attitudes and perceptions of their role as lay counselor, and provided twice monthly supervision to teachers.

Measures

Quantitative Assessments

Teacher knowledge was assessed in summative assessments consisting of two written case vignettes highlighting the mental health struggles of children as covered in the training. (**Appendix Fig. 1**) Participants were asked to answer 5 multiple choice questions, fill in 2 blank charts, and complete a matching column associated with the first vignette and 4 multiple choice questions related to a second vignette. We developed this assessment to align with training and intervention content. The assessment was available in Nepali and took 30 minutes to complete. It was administered at 3 time points: pre-training (PRE), post-training (POST), and intervention year-end (INT) (coinciding with academic year-end, approximately 6–8 months after POST).

Teacher's mental health attitudes, self-perceptions of their knowledge, and perceptions on serving as lay counselor were assessed using a study specific survey. The survey included items across 6 categories: Knowledge, Intent, Behavior, Job, Intervention, and Barriers (**Appendix Fig. 2**). This survey was designed to align with the social context. (23, 24) Questions from "Knowledge" and "Barriers" mapped onto self-perceptions of knowledge; "Job" and "Behavior" onto attitudes; and "Job", "Intent" and "Intervention" onto perceptions of serving as lay counselor. The survey consisted of 44 items with a five-point Likert scale, ranging from "Strongly Agree" to "Strongly Disagree". We calculated separate scores for each of the 6 categories, as well as an overall score. A lower score indicated teachers were positively influenced by serving as a lay counselor within the system of care. The survey was available in Nepali and required 10 minutes to complete. It was administered PRE, POST, and INT.

The assessment and survey were translated from English to Nepali, back-translated, and adjusted for accuracy after being compared with the original versions.

Qualitative Assessment

At the INT time point, we conducted semi-structured interviews with 17 of 19 teachers to assess: intervention feasibility, acceptability, and impact; knowledge of and attitude towards mental health after being a lay counselor; teachers' perceptions of serving as lay counselor; and ideas for improving the intervention. Interview guides were iteratively developed around themes of feasibility, acceptability, and impact and then finalized with the research team and program staff. Questions were open-ended to allow teachers to direct the flow of the interview. (**Appendix Fig. 3**) Trained research assistants based in Darjeeling facilitated the interviews in Nepali. They recorded field notes to complement transcripts. Interviews were audio-recorded and then transcribed and translated into English by an independent translator. A second study staff member reviewed transcriptions and translations for accuracy.

Data Analysis

Quantitative

Demographics of the teachers who completed surveys and assessments PRE (which were all teachers who initially enrolled in the study), those who completed the quantitative follow-up INT, and those who completed the interview INT were compared. The independent sample *t* test was used for continuous variables, χ^2 for categorical variables, and Spearman's Rank Correlation for ordinal variables.

Teacher knowledge summative assessment means were compared PRE to POST, POST to INT, and PRE to INT using the paired *t* test. Means of teacher mental health attitudes survey scores were evaluated using the paired *t* test, comparing PRE to POST score, POST to INT scores, and PRE to INT scores. Cohen's *d* was calculated to quantify potential effect sizes. SAS version 9.4 (Cary, NC) was used for all data analysis. (25)

Qualitative

The semi-structured interviews from 17 teachers were analyzed with the goal of qualitative description. An inductive content analysis approach was pursued using the software ATLAS.ti version 8.4.15, 2019 for analysis. (26, 27) Two independent analysts iteratively analyzed the data, each analyzing all interviews, using the template coding style as per Crabtree and Miller. (27, 28) Group consensus was used to resolve coding discrepancies. Codes were coalesced to identify emergent themes alongside key supporting quotations. Results of the analysis were linked to the aim of understanding teacher knowledge of and attitudes towards mental health after acting as lay counselors as well as teachers' perceptions of serving as lay counselor.

Results

Demographics

Teachers who completed quantitative measures PRE were 74% female. Those who additionally completed INT knowledge summative assessments were 71% female, while teachers who completed INT mental health attitudes surveys were 73% female. Teachers who completed interviews were 82% female. Teachers from scheduled caste or tribe, officially recognized groups of historically disadvantaged peoples of the Government of India, ranged from 30% – 36%. The group of teachers who first enrolled in the study were not statistically different from those who completed either quantitative assessment or from those who completed the interview (Table 1).

Quantitative Results

Teacher knowledge as measured by the study-specific summative assessment across all teachers did not show any changes PRE versus POST, POST versus INT, and PRE versus INT (**Table 2**). Examined individually, 7 of the 14 teachers had sustained higher INT summative assessment scores compared to their pre-training scores, demonstrating sustained improvement over time. Six teachers had lower INT summative assessments scores compared to PRE and one teacher had the same PRE and INT score. On the survey assessing mental health attitudes, knowledge, and perceptions of serving as lay counselor, teachers showed improvements in their overall scores in POST compared to PRE, with lower POST training scores on the study-specific survey (Fig. 1). At INT, teachers' scores returned to the same level as their pre-training scores, indicating that teachers' mental health knowledge and attitudes and perceptions of serving as lay counselor reverted to pre-training levels. Individual category scores either followed a similar pattern as the overall score or remained the same on average PRE, POST, and INT. (Fig. 2).

Qualitative Results

Predominant themes and representative quotes from semi-structured interviews conducted at INT are displayed in **Table 3**. Themes and quotes reported were those related to teachers' mental health knowledge and attitudes and perceptions of serving as lay counselor.

Mental Health Knowledge

A majority of teachers expressed retaining the knowledge they learned from the training and supervision (**Table 3**). Many discussed grasping mental health concepts, behavior analysis and behavior plan elements taught in the training. Regarding specific CBPT techniques, teachers rarely discussed them. A few teachers indicated understanding of CBPT techniques as indicated by discussing single tools they regularly used. Notably, however, most teachers discussed the novelty and usefulness of the basic therapeutic principles of relationship-building and asking open-ended questions. Their described use of these principles was often during instructional time or breaks in their school's schedule. They also discussed tailoring their classroom interactions with and classwork for the targeted student to better meet the student's needs, such as providing in-class accommodations for their schoolwork.

A few teachers felt they needed more time to learn the training material to better grasp and apply mental health knowledge (**Table 3**). Some teachers expressed uncertainty as to how to use specific skills taught during the training. However, several teachers described supervision as a mechanism to later grasp and retain knowledge from the training. A few teachers expressed wanting more supervision sessions to guide their care.

Teachers almost unanimously expressed a greater self-efficacy in managing the mental health of students in their classrooms, an indication of applied knowledge retention. Teachers stated decreasing use of the following practices while working with students with mental health struggles: (1) using only an authoritative voice in the classroom, (2) using physical punishment to motivate the children, and (3) speaking with children "roughly" or "rudely".

Mental Health Attitudes

Teachers overall expressed progression towards inclusive mental health attitudes, beliefs, and practices (**Table 3**). Most expressed newly understanding students' behavior through a psychological lens after serving as lay counselor. Teachers also reported understanding the importance of mental health within their classrooms for student learning. Some discussed adjusting their teaching styles to better accommodate their students with mental health struggles.

Perceptions of Serving as Lay Counselor

A majority of teachers indicated a willingness to serve as lay counselor (**Table 3**). Several teachers showed enthusiasm at the opportunity to continue to be a lay counselor within the program. Many discussed their regular use of mental health skills learned and changes to their own discipline practices as an indicator of willingness to serve as a lay counselor. Some expressed a desire to learn more skills to improve their practice. Some further requested for the program to expand to other schools given the need they felt the program filled in their school.

Some teachers had concerns with certain aspects of the program (e.g., *"The thing that didn't quite work is the one where we give stars to the students for their work,"*) or the pace of progress in children (e.g., *"I cannot say it's extremely effective and there had been a lot of changes... However, I have seen and observed that are some changes in them [students] and I even get to hear from the parents that there has*

been changes in the child."). Overall, no teachers broadly criticized the program or their role as lay counselor.

Discussion

This study contributes to the emerging literature on task-shifting children's mental health care to schools as part of ongoing efforts to bridge the wide care gap, particularly in LMICs. Most studies show teacher involvement in school mental health confined to promotion or prevention curriculum delivery, limiting publications of assessments of teacher knowledge and attitudes to those with a different, perhaps less intensive focus. (8, 29) Only one group has explored whether teachers can be leveraged to deliver indicated care; the youth who received the study's teacher-delivered care did not demonstrate changes to their mental health status. (8, 18) As previously discussed, the role of individual-level factors and whether they were modifiable were not explored as part of the study's negative results. (18, 30, 31) This study assesses how training, supervision, and experience can influence individual-level teacher factors that may underlie teachers' ability to deliver effective indicated child mental health care. It uniquely contributes to an exploration of whether teachers may be able to deliver indicated care to fill the care gap.

The results present a complex picture of the influence that mental health training, regular supervision, and working as a lay counselor have on teacher mental health knowledge and attitudes and their perceptions of serving as lay counselor. Findings from the qualitative data are discordant with the results from study-specific quantitative forms. Teacher knowledge as measured by a study-specific assessment did not appear to change when comparing PRE, POST, and INT. Semi-structured interviews at INT, though, revealed that teachers grasped knowledge from the training and supervision and further changed their own behavior, a demonstration of knowledge retention. Similarly, teachers' mental health attitudes on a study-specific survey improved POST compared to PRE, but at INT appeared to revert to PRE levels. However, in semi-structured interviews at INT, a majority of teachers expressed that they underwent significant changes in their attitudes towards mental health and provided examples of being more inclusive of students with mental health struggles. Moreover, a majority of teachers expressed positive perceptions of being a lay counselor, expressed interest in continuing to serve as lay counselors, and encouraged study staff to expand the program to other schools.

Use of semi-structured interviews allowed teachers to share their experiences with little prompting, leading to insights that may not have been clear to ask about with closed-ended questions. By contrast, the study-specific surveys quantitatively evaluated the mental health knowledge and attitudes of teachers with questions determined *a priori*. Scant literature published exploring the mental health knowledge and attitudes of teachers who have served as lay counselors was available to guide question formation. Instead, these questions were based on the working hypothesis for the intervention's mechanism of change that teachers grasped and retained knowledge, shifted attitudes, and changed their daily practice the way mental health trainees in a professional mental health training program would, as though their sole focus were to deliver care. (8, 18) Instead, the semi-structured interviews revealed that teachers grasped and retained mental health knowledge and changed attitudes towards mental health that were

relevant to the way in which mental health techniques serve teachers' primary goal of educating children, such as increasing empathy, building individual relationships and trust, and utilizing in-class accommodations.

Thus, the way in which a teacher as a lay counselor delivers care to students may hinge on the incorporation of basic therapeutic interactions into classroom instruction time, using mental health techniques as part of their knowledge transfer process. In other words, teachers appear to be modifying instructional methods as the "therapy" to improve the mental health of their students. Here, we coin the term "education as therapy" to describe this emerging model of care.

Certain forms of education, such as special education in HICs, similarly adjust teaching techniques to the special needs of students. (32, 33) Special education, however, focuses on knowledge transfer and addresses students' non-academic needs just sufficiently to allow for knowledge transfer. (33) By contrast, in "education as therapy", teachers appear to be making the knowledge transfer process therapeutic in and of itself, with an end goal of both knowledge transfer and improved mental health status. Accordingly, specific assessment questions evaluating teachers' knowledge and attitudes about mental health as they serve as lay counselors should reflect the expected changes as they pertain to educating students, not as they pertain to a traditional care pathway rooted in an office-like model.

An "education as therapy" model of care relies on teachers shifting their professional practice to include mental health techniques. Teachers in this study reported notable shifts in their practice, including decreased use of (1) physical punishment, (2) authoritarian voices, and (3) speaking "roughly" or "rudely" with their students. These changes to practice have been difficult to instill broadly amongst teachers in India, serving as a potential barrier to teachers delivering care in this setting. (34, 35) Traditional teacher practices may be reflective of the attitudes of teachers in India towards mental health. (34, 35) Teachers in India have expressed mixed to negative attitudes towards children with behavioral struggles and their inclusion in the classroom. (23) Further, there has historically been some sentiment in India that children have limited human rights, with use of fearful means to "control" children seen as culturally acceptable by some despite being banned by law. (34, 35) In this study, teachers reported that, as a result of the training and supervision they received and having to act as a lay counselor, their attitudes changed and their practice evolved accordingly. Thus, an "education as therapy" model may be possible with the appropriate training and supports in place to encourage teacher attitude shifts and subsequently practice change.

By delivering care to children during their actual moments of struggle as part of a naturally occurring process in a child's every day, "education as therapy" deviates from the traditional office-based therapeutic sessions in which activities are solely focused on examining thoughts, feelings, and coping skills in isolation. The findings from this study indicate that teachers accordingly may not grasp and apply knowledge in the same way or have similar attitude changes as lay counselors who are delivering care in office-like models. They in turn highlight a potential limitation of teacher-delivered care overall - whether teachers have the time and capacity to deliver traditional one-on-one care to children in need of

mental health services in the same way in which non-teacher lay counselors have been shown to do. (6, 18) However, findings from this study indicate that an alternative form of care, “education as therapy”, may emerge from a teacher-delivered system of care that is in line with typical teacher duties while concurrently addressing students’ mental health needs. Whether this study’s findings are a precursor to an alternative, effective system of care warrants further investigation.

This study has a number of limitations. With a small sample size, the study results are exploratory and not conclusive; further studies with larger sample sizes may be able to more conclusively answer whether teacher knowledge and attitudes change under similar programming. Moreover, the teachers in this non-randomized pilot may have been highly motivated and thus may not be representative of the teacher population as a whole. Further, there may be a demand characteristic at play, where teachers may have subconsciously inflated the reported, qualitative degree to which the intervention has changed their cognitions and behaviors. It is possible that these findings may not occur across a broader population of teachers acting as lay counselors.

The lack of change in the quantitative measures of teacher knowledge and attitude may have been due to the intervention design and not a mismatch between survey questions and teacher experience. As a few teachers indicated the need for more time in training and the perceived utility of more frequent supervision sessions, teachers may actually be able to deliver office-like care with more professional support than provided during the study. It is also possible that the quantitative measures were assessing knowledge and attitude change expected at the level of a trainee in a mental health professional program that may have been more granular and advanced than what would be expected for a lay counselor with other significant job duties to achieve.

Conclusion

After completing training, receiving supervision, and serving as a lay counselor, teachers in this study were able to grasp and retain mental health knowledge in a way that would support their ability to deliver a form of task-shifted child mental health care, expressed a positive change in their attitudes towards mental health, and demonstrated favorable perceptions of serving as lay counselor. The qualitative and quantitative discordance in findings highlights the need for additional research using a larger sample size to further validate teacher knowledge, attitude, and practice results from this study as well as explore how teacher-delivered care may take structure. Findings from this study allude to a system of care, “education as therapy”, that is closer in form to an educational intervention that concurrently addresses student mental health rather than the traditional office-based model of mental health.

Once robustly documented and understood as a system, further studies are recommended to assess whether an educational intervention as a system of care results in improved mental health outcomes for children at highest need of mental health care in LMICs, where the care gap is widest. (1, 3) Should children receiving care in an “education as therapy” system show improved child mental health outcomes, such an alternate system of child mental health care may be sustainable. Teachers are

existing human resources that could be leveraged to deliver care that could seamlessly be incorporated into their daily work, all occurring within an existing societal structure. Thus, in addition to exploring how training, supervision, and acting as a lay counselor may affect teachers' mental health knowledge and attitudes, this study may document the beginnings of a novel alternative system of child mental health care with the potential to improve access significantly, potentially being available everywhere teachers teach.

List Of Abbreviations

Common abbreviations

- Cognitive Behavior Play Therapy (CBPT)
- High income countries (HICs)
- Indian rupees (INR)
- Low and middle-income countries (LMIC)
- Low cost private (LCP) primary schools
- United States dollars (USD)

Intervention time points

- Pre-training (PRE)
- Post-training (POST)
- Intervention year-end (INT) (coinciding with academic year-end, approximately 6-8 months after POST)

Declarations

Ethics approval and consent to participate

The research protocol and all informed consent forms were approved by the University of North Carolina at Chapel Hill Institutional Review Board and a Darjeeling-based Ethics Committee.

- Schools: PG called principals of area schools to gauge interest. Interested principals discussed with their teachers their interest in intervention delivery and study participation.
- Teachers: All eligible teachers in participating schools were invited to meet with study representatives to review study protocols. Those interested in participating voluntarily signed a written informed consent.

Consent for publication

As part of our consent form, teachers were made aware that findings from the study would be submitted for peer review with the possibility of publication. Any data presented in this manuscript has been de-identified.

Availability of data and materials

The datasets generated and/or analyzed during the current study are not publicly available due to the connectedness of the Darjeeling community, the relatively small sample size of teachers included where families may be able to connect which children they know received services, and with mental health continuing to be stigmatized in the Darjeeling area. Participants did not agree to share their data publicly and they are NOT available from the corresponding author on request.

Competing interests

CMC, PG, and MM hold the copyright to the training materials, decision support tools, and intervention materials for the teacher-led task-shifted alternative system of children's mental health care at the center of this manuscript. They have disclosed this interest fully to BioMed Central, and are awaiting discussion of an approved plan for managing any potential conflicts arising from this arrangement.

Funding

This work was generously supported by the American Association of Child and Adolescent Psychiatry (AACAP) through the Pilot Research Award for Junior Faculty and Child and Adolescent Psychiatry Fellows, supported by AACAP, awarded to CMC; the American Psychiatric Association Minority Fellowship Program awarded to CMC; and the University of North Carolina School of Medicine Office of Global Health Education through the Global Health Scholar Award given to CMC.

Authors' contributions

CMC, KH, and MM designed the study. BNG was involved in study design. CMC, PG, and MM created the teacher training, intervention materials, and intervention protocol. PG delivered the teacher training, provided supervision to teachers, and collected data. SB provided supervision to teachers and collected data. CMC, AG, and MM provided umbrella supervision for the supervision of teachers by PG and SB. MML performed quantitative data analysis while JV and PF performed qualitative data analysis. CMC, MML, KH, PG, SB, JV, PF, AG, and MM were involved in data interpretation. CMC, MML, JV, KH, and MM drafted the manuscript. All authors revised and approved the final version of the manuscript before submission.

Acknowledgements

We profusely thank Roshan Rai, Executive Director, and Ashesh Rai, Assistant Director, of Darjeeling Ladenla Road Perna (DLRP); Nima Choden, Dhiraj Rai, Maryam Subba, and Satyam Tamang, community health workers of DLRP; Radha Khawas, previous research assistant at DLRP; and Fatima Salman of the

Atlantic Council for their support of the implementation of the teacher-led task-shifted children's mental health care studied in this manuscript.

Works Cited

1. WHO. mhGAP intervention guide for mental, neurological and substance use disorders in non-specialized health settings: World Health Organization; 2010.
2. Banerjee T. Psychiatric morbidity among rural primary school children in West Bengal. *Indian journal of psychiatry*. 1997;39(2):130.
3. Hossain MM, Purohit N. Improving child and adolescent mental health in India: Status, services, policies, and way forward. *Indian Journal of Psychiatry*. 2019;61(4):415.
4. Burns BJ, Costello EJ, Angold A, Tweed D, Stangl D, Farmer EM, et al. Children's mental health service use across service sectors. *Health affairs*. 1995;14(3):147-59.
5. Kakuma R, Minas H, van Ginneken N, Dal Poz MR, Desiraju K, Morris JE, et al. Human resources for mental health care: current situation and strategies for action. *The Lancet*. 2011;378(9803):1654-63.
6. Patel V, Weiss HA, Chowdhary N, Naik S, Pednekar S, Chatterjee S, et al. Effectiveness of an intervention led by lay health counsellors for depressive and anxiety disorders in primary care in Goa, India (MANAS): a cluster randomised controlled trial. *The Lancet*. 2010;376(9758):2086-95.
7. Patel V, Weobong B, Weiss HA, Anand A, Bhat B, Katti B, et al. The Healthy Activity Program (HAP), a lay counsellor-delivered brief psychological treatment for severe depression, in primary care in India: a randomised controlled trial. *The Lancet*. 2017;389(10065):176-85.
8. Van Ginneken N, Tharyan P, Lewin S, Rao GN, Meera S, Pian J, et al. Non-specialist health worker interventions for the care of mental, neurological and substance-abuse disorders in low-and middle-income countries. *Cochrane Database Syst Rev*. 2013;11(11):CD009149.
9. Fazel M, Patel V, Thomas S, Tol W. Mental health interventions in schools in low-income and middle-income countries. *The Lancet Psychiatry*. 2014;1(5):388-98.
10. Reinke WM, Stormont M, Herman KC, Puri R, Goel N. Supporting children's mental health in schools: Teacher perceptions of needs, roles, and barriers. *School Psychology Quarterly*. 2011;26(1):1.
11. Auger RW. The accuracy of teacher reports in the identification of middle school students with depressive symptomatology. *Psychology in the Schools*. 2004;41(3):379-89.
12. Bradshaw CP, Buckley JA, Jalongo NS. School-based service utilization among urban children with early onset educational and mental health problems: The squeaky wheel phenomenon. *School Psychology Quarterly*. 2008;23(2):169.
13. UNSECO. Progress in getting all children to school stalls but some countries show the way forward. *Education for All Global Monitoring Report Policy Paper*. 2014;14.
14. Fairbanks S, Simonsen B, Sugai G. Classwide secondary and tertiary tier practices and systems. *Teaching Exceptional Children*. 2008;40(6):44-52.

15. Franklin CG, Kim JS, Ryan TN, Kelly MS, Montgomery KL. Teacher involvement in school mental health interventions: A systematic review. *Children and Youth Services Review*. 2012;34(5):973-82.
16. Patel V, Kieling C, Maulik PK, Divan G. Improving access to care for children with mental disorders: a global perspective. *Archives of disease in childhood*. 2013;98(5):323-7.
17. Han SS, Weiss B. Sustainability of teacher implementation of school-based mental health programs. *Journal of abnormal child psychology*. 2005;33(6):665-79.
18. Shinde S. Effectiveness of SEHER, a school-based intervention to promote health in adolescents in Bihar, India: A clustered randomised trial: London School of Hygiene & Tropical Medicine; 2018.
19. Gorkhaland Territorial Administration. GTA Profile 2018 [Available from: <http://www.gta-darjeeling.org/node/285>].
20. Rai RP. Small farmers: locating them in "Darjeeling Tea". In: Bag N, Bag A., Palini L.M.S., editor. *Tea Technological Initiatives*. New Delhi, India: New Delhi Publishing Agency; 2017. p. 19-38.
21. Matergia M, Ferrarone P, Khan Y, Matergia DW, Giri P, Thapa S, et al. Lay Field-worker–Led School Health Program for Primary Schools in Low-and Middle-Income Countries. *Pediatrics*. 2019;143(4):e20180975.
22. Knell SM. *Cognitive-behavioral play therapy*: Rowman & Littlefield; 1993.
23. Sharma U, Moore D, Sonawane S. Attitudes and concerns of pre-service teachers regarding inclusion of students with disabilities into regular schools in Pune, India. *Asia-Pacific Journal of Teacher Education*. 2009;37(3):319-31.
24. Parasuram K. Variables that affect teachers' attitudes towards disability and inclusive education in Mumbai, India. *Disability & Society*. 2006;21(3):231-42.
25. SAS Institute Inc. SAS. 9.4 ed. Cary, NC2019.
26. ATLAS.ti Scientific Software Development GmbH. ATLAS.ti. 2019.
27. Thomas DR. *A general inductive approach for qualitative data analysis*. 2003.
28. Crabtree BF, Miller WL. *Doing qualitative research*: sage publications; 1999.
29. Eustache E, Gerbasi M, Fawzi MS, Fils-Aimé J, Severe J, Raviola G, et al. Mental health training for secondary school teachers in Haiti: a mixed methods, prospective, formative research study of feasibility, acceptability, and effectiveness in knowledge acquisition. *Global Mental Health*. 2017;4.
30. Shinde S, Weiss HA, Khandeparkar P, Pereira B, Sharma A, Gupta R, et al. A multicomponent secondary school health promotion intervention and adolescent health: An extension of the SEHER cluster randomised controlled trial in Bihar, India. *PLoS medicine*. 2020;17(2):e1003021.
31. Shinde S, Weiss HA, Varghese B, Khandeparkar P, Pereira B, Sharma A, et al. Promoting school climate and health outcomes with the SEHER multi-component secondary school intervention in Bihar, India: a cluster-randomised controlled trial. *The Lancet*. 2018;392(10163):2465-77.
32. Education UDo, editor Office of Special Education and Rehabilitative Services. 39th annual report to Congress on the implementation of the Individuals with Disabilities Education Act; 2017: Office of Special Education Programs Washington, DC.

33. Landrum TJ, Tankersley M, Kauffman JM. What is special about special education for students with emotional or behavioral disorders? *The Journal of Special Education*. 2003;37(3):148-56.
34. Deb S, Walsh K. Impact of physical, psychological, and sexual violence on social adjustment of school children in India. *School Psychology International*. 2012;33(4):391-415.
35. Morrow V, Singh R. Corporal punishment in schools in Andhra Pradesh, India: Children's and parents' views: *Young Lives*; 2014.

Tables

Table 1 *Teacher Demographics*

	Completed training and pre-training attitudes survey and knowledge summative assessment (PRE) (N = 23) ^c	Completed knowledge summative assessment post-training (POST) and at end of intervention (INT) (N = 14) ^c	Completed attitudes survey post-training (POST) and at end of intervention (INT) (N = 15) ^c	Completed semi-structured interview at end of intervention (INT) (N = 17) ^c
Continuous Variables	Mean (range)	Mean (range)	Mean (range)	Mean (range)
Age in years	27.6 (21.0-39.0)	28.9 (22.0-39.0)	28.6 (22.0-39.0)	27.9 (21.0-39.0)
Years Teaching at Current School	4.17 (1.0-17.0)	4.9 (1.0-17.0)	4.9 (1.0-17.0)	4.8 (1.0-17.0)
Years Teaching Total	4.65 (1.0-17.0)	5.7 (1.0-17.0)	5.6 (1.0-17.0)	5.4 (1.0-17.0)
Categorical variables	N (%)	N (%)	N (%)	N (%)
Gender = Female	17 (74%)	10 (71%)	11 (73%)	14 (82%)
Member of Scheduled Caste/Tribe ^a	7 (30%)	5 (36%)	5 (33%)	6 (35%)
Language^b				
Nepali	22 (96%)	13 (93%)	14 (93%)	16 (94%)
Bengali	2 (9%)	0 (0%)	0 (0%)	0 (0%)
English	21 (91%)	13 (93%)	14 (93%)	17 (94%)
Hindi	16 (70%)	9 (64%)	9 (60%)	10 (58%)
Other	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Level of Education				
Some Primary	1 (4%)	0 (0%)	0 (0%)	0 (0%)
Finished Primary	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Some Secondary	2 (9%)	2 (14%)	2 (13%)	2 (12%)
Finished Secondary	2 (9%)	0 (0%)	0 (0%)	1 (6%)
Undergraduate or Higher	18 (78%)	12 (86%)	13 (87%)	14 (82%)

Has Formal Training in Education	4 (17%)	4 (29%)	4 (27%)	4 (24%)
Has a Teaching Certificate	3 (13%)	3 (21%)	3 (20%)	3 (18%)
Class Levels Taught^b	12 (52%)	7 (50%)	7 (47%)	8 (47%)
Class I (Kindergarten)	17 (74%)	9 (64%)	10 (67%)	12 (71%)
Class II (1st Grade)	17 (74%)	9 (64%)	10 (67%)	12 (71%)
Class III (2nd Grade)	19 (83%)	11 (79%)	12 (80%)	14 (82%)
Class IV (3rd Grade)	19 (83%)	10 (71%)	11 (73%)	13 (76%)
Class V (4th Grade)	14 (61%)	8 (57%)	8 (53%)	10 (59%)
Class VI (5th Grade)	6 (26%)	6 (43%)	6 (40%)	5 (29%)
Class VII (6th Grade)				
Additional School Responsibilities	6 (26%)	5 (36%)	5 (33%)	5 (29%)
Yes	3 (50%)	3 (60%)	3 (60%)	3 (60%)
Sports	1 (17%)	1 (20%)	1 (20%)	1 (20%)
Cultural	1 (17%)	1 (20%)	1 (20%)	1 (20%)
Accounting	1 (17%)	0 (0%)	0 (0%)	0 (0%)
Typing				
Other Employment	15 (65%)	10 (71%)	10 (67%)	10 (59%)
Yes	11 (48%)	8 (57%)	8 (53%)	9 (53%)
Housework	1 (4%)	1 (7%)	1 (7%)	1 (6%)
Selling things/ running a shop	4 (17%)	3 (21%)	3 (20%)	2 (12%)
Farming/agricultural	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Work on tea garden	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Work on tea garden	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Transport (driver, etc.)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Health worker	1 (7%)	0 (0%)	0 (0%)	0 (0%)
Manual labor	1 (7%)	1 (10%)	1 (10%)	1 (6%)
NGO	5 (33%)	4 (40%)	4 (40%)	5 (29%)
Tour Guide				
Tutoring				

^a Scheduled Caste and Scheduled Tribe are standard terms used in Indian demographic surveys referring to officially recognized groups of historically disadvantaged peoples by the government of India and State of West Bengal.

^b Sum is greater than 100% due to individuals speaking multiple languages, teaching multiple grade levels, or having multiple side jobs

^c p-value is for comparison between those who did and did not complete the final study activities fisher's exact test for categorical variables, and Student's t-test for continuous variables. No demographic variables were significantly different across time periods

Table 2 Mean scores for pre, post, and post-intervention for knowledge summative assessments

	PRE N = 23	POST N = 23	INT N = 14	PRE-POST comparison p-value*, Cohen's d	POST-INT comparison p-value*, Cohen's d	PRE-INT comparison p-value*, Cohen's d	ANOVA
	Mean (SD)	Mean (SD)	Mean (SD)				
Total score	5.61 (1.03)	5.66 (1.38)	5.30 (1.54)	0.89, 0.04	0.47, 0.25	0.47, 0.24	0.70

*t-test

^significant if p<0.05

Table 3 Themes and representative quotes from teacher semi-structured interviews

Question Category	Theme	Quote
Knowledge	Ability to identify children in need	<i>"I thought of one child and when the time came to identify one who needed help, I ended up choosing the child. In the training, we had learned to identify the qualities of a withdrawn child. This child possessed these qualities."</i>
	Ability to use program tools to support children	<i>"I used tools to calm them down and also referred to the physical coping strategies such as taking long deep breaths to help them calm down and cope with the situation".</i>
		<i>"There was this child in the primary section that was never active in class. The child wasn't eager to join or participate in any of the activities and we assumed that was her nature. We had never before coaxed her to join in. We thought this is how she worked... But after the training we started to coax her and started to give her positive words of encouragement, and we told her that she is such a capable and good girl and that she can do it. This approach worked because the child started to participate in the activities at school."</i>
		<i>"I chose the children because of their bad handwriting. They (children) definitely improved in that (handwriting) because I made them write two extra copies and rewarded them by giving them stars and telling them that I would give a special prize for the person who would finish their work the fastest."</i>
	Change in self-efficacy	<i>"Earlier we would very easily punish the child without trying to find out the reason for his/her actions. But now we know that there are issues that lead a child to do that mischief or there is a reason why the child is behaving in that manner. We are much more aware and know better than to punish, scold, or beat up the child."</i>
	Challenges	<i>"I was a bit unclear and unsure on how to use the emotional thermometer, so I didn't use it."</i>
Attitudes	Changes in beliefs about mental health	<i>"Had it not been for the training I would probably have called him (the student) a thief... but the training taught me better."</i>
		<i>"Before the training we would assume that the child was not interested and we wouldn't bother going over to them and finding out why they aren't showing any interest like the rest. We would tell them if they do the work it's for their own good and if they do not, then it's their loss. But now we have taken the training, we have come to understand that there is a reason for the withdrawal. Instead of treating them like outcastes, we now go to them and engage them in conversation and try to find out what is bothering them."</i>
Perceptions of serving as a lay counselor	Serving as lay counselor was acceptable	<i>"We would like to thank you for giving us the skills and trainings through which our children have been able to improve, and we would like to get many more such trainings".</i>

"The program should not stop; it needs to continue and not just in our area... there must be a lot of other such schools in other rural areas, and they would most certainly need this kind of program."

Need for more support

"I felt we would really need additional training to teach us how to do all these things because I feel the training was done at such a short span of time that we didn't get enough time."

Figures

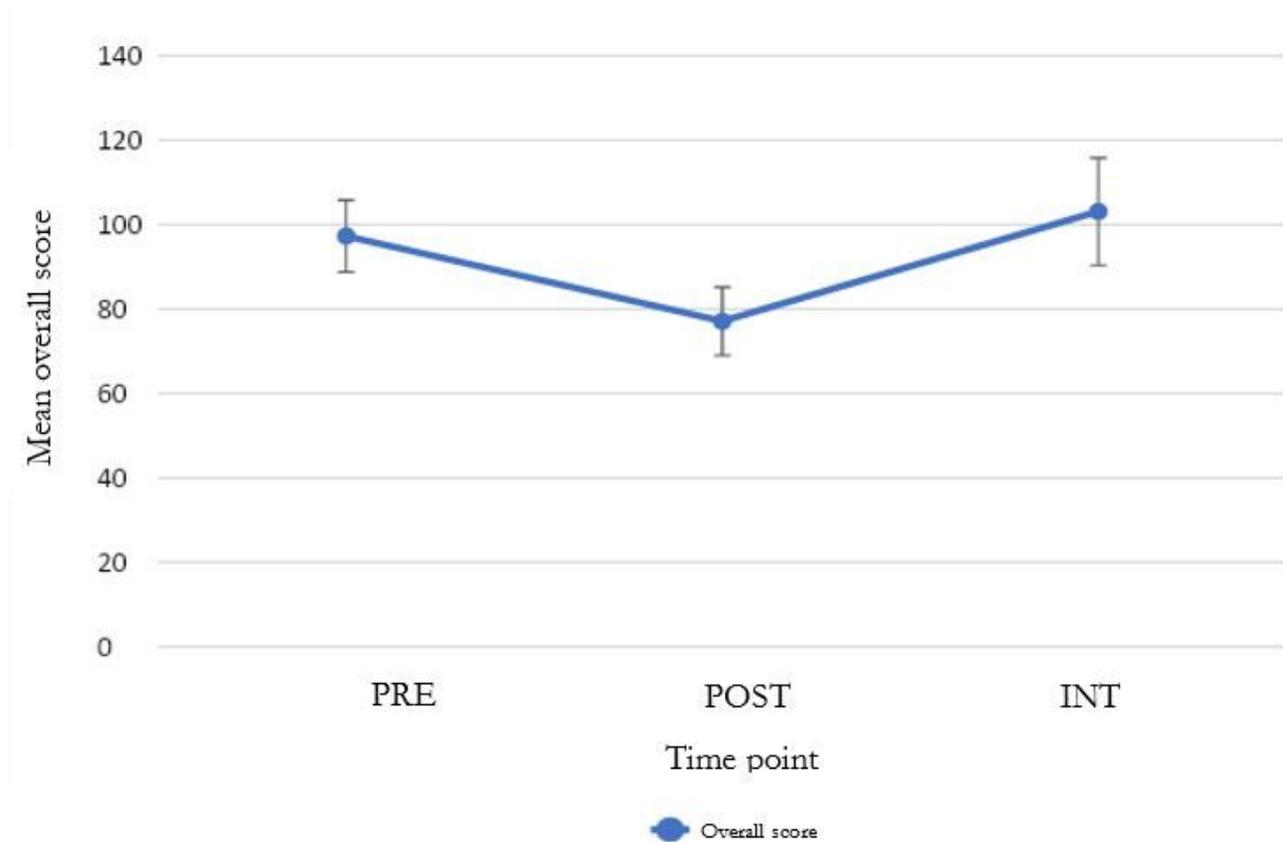


Figure 1

Mean overall scores (and 95% confidence intervals) for pre, post, and post-intervention for attitudes, knowledge, and perceptions surveys

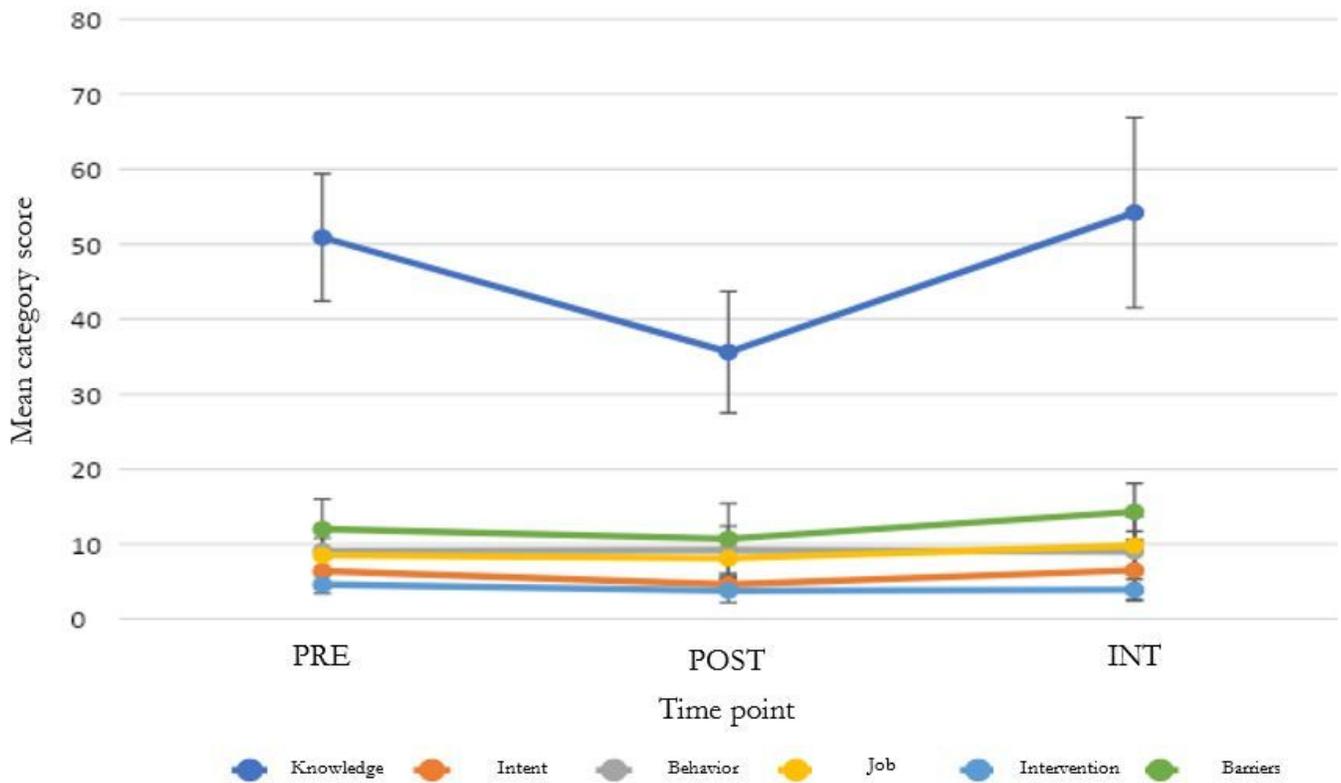


Figure 2

Mean category scores (and 95% confidence intervals) for pre, post, and post-intervention for attitudes, knowledge, and perceptions surveys

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [AdditionalFile3.docx](#)
- [AdditionalFile2.docx](#)
- [AdditionalFile1.docx](#)