Open Access

OBM Integrative and Complementary Medicine

LIDSEN Publishing Inc.

Research Article

Teacher Outcomes with a School-Based Mindfulness Intervention during COVID-19

Traci Jarrett [1, †, *], Ilana Haliwa [2, †], Jennifer Ludrosky [3, †], Ashley Mason [4, †], Gretchen Prather [4, †], Brittney Barlett [5, †], Amy Snodgrass [6, †], Geri Dino [1, †]

1. West Virginia Prevention Research Center, West Virginia University, PO Box 9190, Morgantown, WV, USA; E-Mails: tjarrett@hsc.wvu.edu; gdino@hsc.wvu.edu
2. Salve Regina University, Newport, RI, USA; E-Mail: ilana.haliwa@salve.edu
3. West Virginia University School of Medicine, Department of Behavioral Medicine and Psychiatry, Morgantown, WV, USA; E-Mail: jmludrosky@hsc.wvu.edu
4. Marshall University, School of Physical Therapy, Huntington, WV, USA; E-Mails: arnott2@marshall.edu; gretchen.prather@marshall.edu
5. Try This West Virginia, Weston, WV, USA; E-Mail: director@trythiswv.com
6. West Virginia University Institute for Community and Rural Health, Morgantown, WV, USA; E-Mail: amy.snodgrass@hsc.wvu.edu

† These authors contributed equally to this work.

* **Correspondence:** Traci Jarrett; E-Mail: tjarrett@hsc.wvu.edu

Academic Editor: Brandis Ansley

Special Issue: Stress, Burnout, and Trauma in Schools: Coping Strategies for Teachers, Staff, and Students

OBM Integrative and Complementary Medicine
2023, volume 8, issue 2
doi:10.21926/obm.icm.2302019

Received: November 30, 2022
Accepted: March 29, 2023
Published: April 13, 2023

Abstract

Teacher burnout is one of the primary drivers of turnover. Skills such as improved classroom management have been shown to mitigate teacher burnout. COVID-19 created classroom disruption and an unprecedented youth mental health crisis. This study examined the effectiveness of a school-based mindfulness training at improving classroom management

self-efficacy and reducing teacher burnout during COVID-19. Elementary school personnel were invited to participate in two versions of Kidding Around Yoga training and to implement with their students. Pre- and post-tests were conducted at 4-6 months (n = 49) to measure individual items related to classroom management, teacher self-efficacy, perceptions of student engagement, and professional quality of life. There were significant differences at post for items related to teacher skills, knowledge, and self-efficacy, and perceptions of the student experience (specifically, student emotional regulation). There were no significant differences between baseline and post in any of the professional quality of life measures. Findings suggest that Kidding Around Yoga is promising as a universal intervention to improve teachers' self-efficacy and skills, and their experience of the classroom. More information is needed to understand if the intervention would have long-term impact on teacher burnout and turnover.

Keywords
Mindfulness; teacher burnout; classroom management; COVID-19

1. Introduction

Burnout is defined as an occupational phenomenon resulting from unmanaged chronic workplace stress [1] and is associated with poor physical and mental health outcomes [2]. Education professionals, such as K-12 teachers, tend to report uniquely high levels of burnout [3-6]. In fact, in a recent national survey of U.S. educators (N = 3,621), 90% reported that burnout was a serious issue affecting their wellbeing [6]. In addition to negative impacts on teacher wellbeing, the effects of burnout include higher rates of teacher turn over [7, 8] and worse student outcomes, including student achievement and adjustment [9-12]. Burnout and its negative sequelae, particularly job turnover, may be particularly salient in certain geographic regions. For example, one third of West Virginia educators quit the profession within their first four years [13]. This contributed to an acute state-wide shortage of teachers with over 1,000 teaching vacancies in K-12 schools as of November 2021 [14].

An established predictor of teacher burnout is classroom management self-efficacy [15] teachers' self-perceived competence in areas such as classroom organization, maintaining classroom order, and maintaining student attention [16]. Teachers who have a sense of self efficacy managing classroom concerns such as disruptive behavior and lack of student attention tend to exhibit lower levels of burnout [15]. The role of teachers' perceived efficacy in classroom management in burnout may be particularly relevant in geographic areas reporting higher levels of adverse childhood experiences (ACEs) among school-aged youth. Childhood trauma is associated with greater student impulsivity, inattention, and lower academic functioning, factors that pose unique challenges to classroom management and, therefore, may tax classroom management skills [17]. Notably, West Virginia ranks among the top ten states with the highest percentage of children reporting two or more ACEs [18]. These statistics, along with the high rates of teacher turnover in the state, suggest a need for locally relevant interventions to improve classroom management self-efficacy to reduce teacher burnout and mitigate teacher turnover.

The COVID-19 pandemic may have exacerbated the urgency for such intervention. Indeed, during the pandemic, teachers became front-line workers in a field where job demands quickly expanded to include learning and implementing novel course delivery methods (e.g., remote, hybrid instruction) and managing classrooms of children exposed to the communal trauma of a global pandemic [19, 20]. Such pandemic-specific job demands are associated with higher levels of classroom teacher burnout [20, 21]. Further, in addition to serving as a unique traumatic stressor, the pandemic may also exacerbate existing trauma among school-aged children. Existing ACEs may be compounded by decreased access to basic mental health services, heightened risk of domestic violence from caregivers, social isolation, and pandemic-related economic challenges [22]. Thus, identification of interventions and training that enhance teacher self-efficacy in classroom management yet allow for effective implementation within classroom-related pandemic constraints, is critical to reducing burnout.

School-based mindfulness is one type of training with the potential for addressing educator burnout. School-based mindfulness training offers guidance for implementing brief exercises such as yoga or guided breathing to increase mindfulness [23, 24], a non-judgmental attention to the present moment [25], and has been associated with lower levels of educator stress and burnout [23, 24, 26-29]. Our prior research suggests that West Virginia educators generally expect school-based mindfulness trainings to be beneficial for themselves and their students, in part by providing the tools necessary to cope with heightened classroom demands during the pandemic [30]. However, these perceptions and expectations were measured prior to training and school-based mindfulness implementation. Thus, the present study expands on this prior research by using pre- and post-training survey methodology.

Research highlighting factors influencing teacher burnout in geographic areas impacted by high rates of student ACEs and teacher turnover is critical. Identifying trainings and interventions that reduce burnout can inform prescriptive policy and organizational agendas to mitigate the existing issues of high turnover and resulting teacher shortages in states such as West Virginia. The present study is novel in that it provides the first quantitative assessments of teacher outcomes associated with the Kidding Around Yoga intervention. The study was conducted as a research evaluation in order to both assess teacher outcomes associated with the intervention and to provide understanding of teacher's perceptions of specific components of the classroom environment. Further, this study is timely in that the research was conducted during the COVID-19 pandemic, a context in which teacher burnout has been uniquely salient [20, 21].

1.1 Aims and Hypotheses

The primary aims of the present study were to assess whether a school-based mindfulness training was effective at 1) improving classroom management, 2) increasing teacher self-efficacy, and 3) reducing teacher burnout in educators in West Virginia during the COVID-19 pandemic. We hypothesized that, compared to pre-training, educators would report improved classroom management, greater teaching self-efficacy, and reduced burnout.

2. Materials and Methods

2.1 Intervention Overview

The current project utilized a teacher-focused intervention through two training programs (EduKAY and OKAY) that are offered through the Kidding Around Yoga (KAY) company [31]. The goal of both training structures is to help teachers lower stress and anxiety and promote resilience in the students and in themselves. Importantly, implementation follows the same model regardless of which training was completed. EduKAY was geared toward schools where several staff wanted to become trained together. OKAY was available online and individuals completed the training at their own pace. Due to COVID-19 restrictions, all trainings were offered online. EduKAY is a six-hour training led by a live online instructor that provides teachers with the skills to implement the KAY curriculum in their classrooms. It includes techniques to introduce mindful physical activity, yoga, meditation, and general mindfulness into academic settings. EduKAY specifically helps teachers use strategies to integrate mindfulness practice into their existing curricular standards. In addition to yoga, KAY includes interactive games, crafts, short songs, and physical activities, based on yoga poses, that can be completed within three minutes to address student stress or anxiety. The OKAY program is a combination of live sessions and self-paced video series that can be completed within five months of participant registration. To complete the training, participants must submit a video recording of themselves teaching a class and must attend a live four-hour workshop session. Educators who have completed OKAY training can then become mindfulness and yoga champions for their respective schools and are encouraged to guide their colleagues as they incorporate yoga into their schools.

2.1.1 Study and Evaluation Planning

The study was planned as a community-engaged research evaluation study with a community-academic partnership group called Mindful West Virginia. As a community-engaged research evaluation, the outcomes of interest, implementation plan, survey questions and timing were planned with community input. The Kidding Around Yoga program was selected because it had been proven to be accessible in West Virginia classrooms in non-study conditions, was low cost, allowed for online training given the COVID-19 pandemic, and although anecdotally successful in WV schools, evidence to support effectiveness was lacking. The study outcomes of interest were to understand both teacher outcomes and teacher perceptions of their classroom environment. The Mindful West Virginia team included mindfulness practitioners, mindfulness trainers, the implementation lead organizations (Marshall University and Try This West Virginia [TTWV]), a school principal, and the research evaluation team. The team worked together to create a recruitment strategy, study measures that would both answer research questions and provide information valuable to local school districts, and study protocol.

2.1.2 Recruitment

School personnel were invited to participate in an online training to implement KAY as part of two grant funded efforts through Marshall University and TTWV. Marshall University recruited teachers via a statewide listserv of school personnel. Additionally, three schools located in

distressed counties in WV were identified to participate in schoolwide EduKAY training. TTWV recruited teachers and schools through a state-wide TTWV Listserv, Facebook page, direct school outreach, encouraging partners to forward to schools who may be interested. Principals were the targeted applicants for whole schools, but anyone could request that the principal apply. TTWV used the same methods to simultaneously advertise EduKAY and OKAY training. Any elementary education teacher (regardless of the principal application) could apply for OKAY training. In the application review process for EduKAY, schools with the highest percentage of students eligible for free/reduced lunch were preferred, as well as those with a staff size ideal for training (<40 staff).

2.2 Data Collection

Data were collected from Fall 2020 to Spring 2021. Three hundred and fifty-two eligible participants registered for EduKAY and OKAY. Participants were invited to participate in baseline and post-surveys (4-5 months). An invitation to complete baseline surveys was sent to a known list of educators and staff who were identified to participate in the trainings at schools. Invitation emails were sent to school personnel email addresses provided by principals. Up to three reminder emails were sent to eligible participants. After eliminating duplicate and incorrect email addresses, 335 potential participants received email invitations, 204 consented to complete the baseline survey and 49 completed the post-survey. The study was approved by the West Virginia University Institutional Review Board.

2.3 Measures

Measures included demographic and educator characteristics. If the participant identified their role as a classroom or other teacher, the survey included individual items on key measures of perceptions of the student experience, teaching environment and classroom management, and educators' knowledge, skills, and self-efficacy. These measures were adapted from scales that included school climate and both operational and instructional concepts [32-35]. The research evaluation team determined that single items rather than a scale score would be most informative for program planning purposes and providing key information about the operationalization of specific factors related to classroom environment at the local level. Although use of single items is not standard practice, there is support that they can be used effectively as an assessment measure [36, 37].

Twelve items were used to assess teachers' perceptions of student experiences including student engagement and belonging (6 items), emotional regulation (4 items), and access to resources (2 items). Teaching environment and classroom management were assessed using seven items. Sixteen items were used to measure teachers' perceived self-efficacy and skills in managing difficult situations with students, connection to students, knowledge of resources, and general support for students' social-emotional environments. The individual items were scored on a Likert scale with scores ranging from 1-5, where higher scores indicated higher levels of each construct, each item was scored and reported individually.

The survey also included the Professional Quality of Life [ProQOL] scale with three subscales measuring compassion satisfaction, burnout, and secondary traumatic stress [38]. Each item on the ProQOL is scored on a scale from 1 (never) to 5 (very often). Corresponding item scores summed to compute each subscale. For each scale, scores of 22 or lower are considered low, scores of 23 to 41

are considered moderate, and scores of 42 and above are considered high. Details on internal consistency and scale validation are available at http://proqol.org.

2.4 Data Analysis

Baseline and post measures were compared using paired sample t-tests. Paired sample t-tests allowed for comparison of means of the individual items in baseline and post when there is a small sample size. Participants who had complete data in both pre- and post-tests were included in the t-test samples. Missing data were not imputed (complete data for 25% of the baseline sample). There were no significant differences between missing and non-missing data at baseline and post on participants' demographics characteristics. SPSS (Version 28) was used for the analysis [39].

3. Results

Table 1 illustrates results comparing baseline with post-intervention survey results. The sample consisted of primarily White female classroom teachers, who had over seven years educational experience at both baseline and post-intervention. There were also no significant differences in sample demographic and educator characteristic proportions at baseline compared to post-intervention, and no significant differences in scores on the Professional Quality of Life sub-scales between baseline and post (Table 2). Baseline measures for each ProQOL subscale were within normal range.

Table 1 Key demographics and educator characteristics.

	Baseline (N = 204) Sample n (%)	**Post-survey (N = 52) Sample n (%)**
Sex		
Female	180 (95.2%)	45 (91.8%)
Male	8 (4.2%)	3 (6.1%)
Prefer Not to Answer	1 (0.5%)	1 (2.0%)
Race		
White	177 (94.1%)	45 (91.8%)
White/Black	2 (1.1%)	0 (0.0%)
White, Asian	1 (0.5%)	1 (2.0%)
Black or African American	3 (1.6%)	1 (2.0%)
Black/American Indian or Alaska Native	1 (0.5%)	0 (0.0%)
Other	2 (1.1%)	1 (2.0%)
Educational Experience		
<1 year	10 (5.4%)	3 (6.1%)
1-2 years	9 (4.9%)	2 (4.1%)
3-4 years	21 (11.4%)	6 (12.2%)
5-6 years	18 (9.7%)	6 (12.2%)
7 years or more	127 (68.6%)	32 (65.3%)
Role in school		

Classroom Teacher	97 (51.6%)	24 (49.0%)
Physical Education or Other Teacher	14 (7.4%)	10 (20.4%)
School Counselor	6 (3.2%)	3 (6.1%)
School Nurse	1 (0.5%)	0 (0.0%)
School Principal or Assistant Principal	11 (5.9%)	2 (4.1%)
School Superintendent or Other Administrator	0 (0.0%)	0 (0.0%)
Other*	57 (30.3%)	9 (18.4%)
Speech Therapist	2 (1.1%)	1 (2.0%)

* **Other roles included:** Secretaries, teacher's aides, mental health coordinators, social workers, school cook, autism specialist, Title I teachers, and health educator.

Table 2 Professional quality of life subscale scores.

	Baseline Mean	**Post-survey Mean**	**t-test**	**p-value**
Compassion/Satisfaction	42.9	43.5	-1.048	0.301
Burnout	22.2	21.9	0.625	0.536
Secondary Traumatic Stress	22.6	23.1	-0.457	0.651

There were significant differences from baseline to post-intervention scores for four items measuring teacher perceptions of student experiences (Table 3). Scores on a student engagement item: "students feel like they can rely on each other for support" were significantly higher at post-intervention ($\overline{x}$ = 4.23, SD = 0.890) compared to baseline ($\overline{x}$ = 3.98, SD = 0.944); $t(46) = -2.287$, $p = 0.027$. Scores on three items measuring student emotional regulation were significantly higher post-intervention compared to baseline, including, "my students can regulate their emotions" (baseline $\overline{x}$ = 3.24, SD = 0.902, post $\overline{x}$ = 3.63, SD = 0.784, $t(48) = -3.714$, $p < 0.001$), "my students can generally calm down on their own when they have behavioral outbursts (baseline $\overline{x}$ = 3.35, SD = 0.948, post $\overline{x}$ = 3.72, SD = 0.736, $t(48) = -3.286$, $p = 0.002$) and "my students spend an adequate time 'on task'" (baseline $\overline{x}$ = 3.66, SD = 0.891, post $\overline{x}$ = 4.02, SD = 0.675, $t(46) = -2.770$, $p = 0.008$).

Table 3 Perceptions of students.

	Baseline Mean	**Post-survey Mean**	**t-test**	**p-value**
Engagement/Belonging				
My students are engaged in the classroom	4.42	4.40	0.151	0.881
Students feel connected to one another	4.13	4.18	-0.465	0.644
There is trust between students in the classroom	4.10	4.21	-1.000	0.322
Students feel like they can rely on each other for support	3.98	4.23	-2.287	0.027*
My students feel connected to our school as a whole	4.02	4.02	0.000	1.00
Generally, students in our school feel like they belong here	4.41	4.37	0.286	0.776
Student Emotional Regulation				

My students are able to self-regulate their emotions	3.24	3.63	-3.714	<0.001*
My students can generally calm down on their own when they have behavioral outbursts	3.35	3.71	-3.286	0.002*
My students pay attention in class	3.83	3.94	-0.868	0.390
My students spend an adequate time "on task"	3.66	4.02	-2.770	0.008*
Resources				
Students in our school are made aware of social emotional support resources that are available to them at the school	4.22	4.20	0.151	0.881
My school goes the extra mile to make sure students' needs are met	4.67	4.52	1.095	0.279

* $p < 0.05$

Among items measuring teachers' perceptions of the teaching environment and management (Table 4), scores on one item was significantly higher post-intervention compared to baseline: "transition times are easy such as getting students settled in and on task (moving between classes, recess, and lunch)" (baseline $\overline{x}$ = 3.85, SD = 0.904, post $\overline{x}$ = 4.10, SD = 0.754, $t(38)$ = -2.039, p = 0.048).

Table 4 Teaching environment and classroom management.

	Baseline Mean	Post-survey Mean	t-test	p-value
I am able to create an environment where you can spend more minutes teaching	4.24	4.42	-1.362	0.181
I can help reduce students' behavior problems	4.33	4.36	-0.227	0.822
I can use strategies to help improve the quality of students' work	4.26	4.36	-1.071	0.291
I am able to maintain overall classroom management	4.49	4.57	-0.829	0.413
I can successfully use strategies to improve students' on-task behavior (focus and attention)	4.32	4.38	-0.466	0.644
I currently use strategies that help students settle down faster	4.18	4.36	-1.640	0.109
Transition times are easy such as getting students settled in and on task (moving between classes, recess, and lunch)	3.85	4.10	-2.039	0.048*

*$p < 0.05$

Of items measuring educators' knowledge, skills, self-efficacy, and support (see Table 5), scores were significantly higher at post-intervention compared to baseline for 7 items, Specifically, "I can help students develop instructional strategies including concept and language development" (baseline $\overline{x}$ = 4.10, SD = 0.718, post $\overline{x}$ = 4.33, SD = 0.737, $t(38)$ = -2.688, p = 0.011), and "I feel connected with my students" at post ($\overline{x}$ = 4.64, SD = 0.529) than at baseline ($\overline{x}$ = 4.64, SD = 0.529; $t(44)$ = -2.146, p = 0.037). "I have strategies that can help me create a supportive environment for

students" was higher at post ($\overline{x}$ = 4.56, SD = 0.503) than at baseline ($\overline{x}$ = 4.33, SD = 0.603); $t(44)$ = -2.664, p = 0.011). "I feel confident that I can de-escalate situations when students are having heightened emotions/outbursts" was significantly higher at post ($\overline{x}$ = 4.29, SD = 0.598) than at baseline ($\overline{x}$ = 4.00, SD = 0.769; $t(44)$ = -2.666 p = 0.011). "I am able to understand the student perspective" was significantly higher at post ($\overline{x}$ = 4.49, SD = 0.549) than at baseline ($\overline{x}$ = 4.07, SD = 0.837; $t(44)$ = -3.759, p < 0.001). "I feel equipped to manage a situation in which a student was in crisis" was significantly higher at post ($\overline{x}$ = 4.02, SD = 0.839) than at baseline ($\overline{x}$ = 3.71, SD = 1.014; $t(44)$ = -2.543, p = 0.015). Finally, "I know the resources available to students in my community if they are in crisis" was significantly higher at post ($\overline{x}$ = 4.13, SD = 0.869) than at baseline ($\overline{x}$ = 3.78, SD = 0.974; $t(44)$ = -2.492, p = 0.017).

Table 5 Educators' knowledge, skills, self-efficacy, and support.

	Baseline Mean	**Post-survey Mean**	**t-test**	**p-value**
I feel connected with my students	4.44	4.64	-2.146	0.037*
I have strategies that can help me create a supportive environment for students	4.33	4.56	-2.664	0.011*
I can help students develop instructional strategies including concept and language development	4.10	4.33	-2.688	0.011*
I am sensitive to the psychological distress of students	4.47	4.64	-1.835	0.073
I feel like I have the tools to recognize signs/behaviors of acute trauma or crisis in my students	4.16	4.33	-1.665	0.103
I can recognize the signs/behaviors of long-term crisis or trauma in my students	4.11	4.24	-1.182	0.244
I feel confident that I can de-escalate situations when students are having heightened emotions/outbursts	4.00	4.29	-2.666	0.011*
I am able to understand the student perspective	4.07	4.49	-3.759	<0.001*
My school has provided me with adequate training for kids in crisis	3.69	3.84	-0.980	0.333
I feel equipped to manage a situation in which a student was in crisis	3.71	4.02	-2.543	0.015*
I know the resources available to students in my SCHOOL if they are in crisis	4.13	4.40	-1.905	0.063
I know the resources available to students in my COMMUNITY if they are in crisis	3.78	4.13	-2.492	0.017*
I feel connected to other adults in my school	4.16	4.36	-1.933	0.060
Our school is a safe place for kids	4.76	4.76	0.000	1.000

Parents of our students are engaged with the school/classroom	3.51	3.64	-0.746	0.459
I know enough about my students' home life to have context if they need social emotional assistance at school	3.82	4.00	-1.431	0.160

* $p < 0.05$

4. Discussion

This study used pre- and post-test assessments with teachers trained in Kidding Around Yoga (OKAY and EduKAY) to examine the effectiveness of a school-based mindfulness training to improve classroom management and self-efficacy, and reduce teacher burnout among West Virginia educators. Notably, this represents one of the first quantitative assessments of the Kidding Around Yoga program for teacher outcomes related to burnout and teachers' perceptions of classroom environment. This is particularly salient during the COVID-19 pandemic, which has increased demand on educators with respect to expansion of teaching methodology and care for students exposed to the collective trauma of a global pandemic [19-21]. Overall, the present study identified improvements in teachers' perceptions of student engagement, belonging, and emotion regulation, teaching environment and classroom management, and teachers' knowledge, skills, self-efficacy, and support following a classroom mindfulness training. However, the study did not support the hypothesis that teacher burnout would be reduced, as no significant changes were observed in professional quality of life (e.g., compassion/satisfaction, burnout, secondary traumatic stress). However, baseline mean scores of burnout and secondary traumatic stress were categorized as low, and compassion satisfaction baseline mean scores were high, indicating that these were not problematic prior to the intervention. Although this was not a statistically significant finding, as an evaluation measure, it provides valuable feedback on potential examination of programmatic modules addressing this factor.

There is increasing evidence that development of the skill of emotional regulation in youth has a positive impact on academic performance, stress reduction, and the potential to mitigate substance use and other risky behaviors [40, 41]. In this sample, teachers perceived a significant increase in students' ability to regulate emotions at post-test compared to pre-test. In addition to positive findings of youth emotional regulation, there are potential benefits to teachers as well. Tsouloupas showed an indirect relationship between teachers' perceptions of student misbehavior and intention to leave the profession [42].

Although there were no significant differences in the Professional Quality of Life subscales from pre-test to post-test, teachers reported having more self-efficacy in managing difficult situations and creating a supportive environment for students, and improvements in self-reported skills, knowledge, and support. This is consistent with findings that teachers who participated in Yoga Based Intervention Strategies showed improved self-efficacy [43]. Similarly, there is a demonstrated an association between teacher self-efficacy and positive student outcomes [44]. Teachers also indicated that they both felt more connected with students at post-test and that they perceived that students felt they could rely on one another, compared to pre-test.

This study did not examine an interaction effect between teachers' self-efficacy or self-reported skills, knowledge, and support, and perceived student emotional regulation and connectedness;

however, other studies have shown that student outcomes are connected with teacher self-efficacy and stress. Thornton explained, "teacher self-efficacy is 'teacher's belief of conviction that they can influence how well students learn, even those who may be considered difficult or unmotivated [42]." However, this study yields preliminary results that are promising to address teacher outcomes related to KAY implementation in classrooms of traditionally underserved rural communities.

Teacher retention, burnout, and increasing mental and behavioral health concerns were classroom challenges that were present before and exacerbated by COVID-19 [45, 46]. Meiklejohn, et al. suggest that integrating school-based mindfulness interventions for both teachers and students hold the "promise of creating a wider and more sustainable benefit to a school community than either approach alone might achieve [24]." A more recent study found that mindfulness training during preservice teacher education resulted in significant improvements in classroom practices. Integrating mindfulness and connection practices into preservice teacher education improves classroom practices [47].

5. Limitations and Future Directions

Although the results are promising, there are limitations to this study. First, 24% of the study sample completed both the pre- and post-test surveys, which may indicate self-selection bias. The timing of the pre- and post-tests was not ideal which may not have allowed educators sufficient time to implement the program in their classroom. The sample was relatively small and conducted in one state resulting in limited generalizability. Inclusion of a control group was not possible as these findings represent the collaborative efforts of various researchers who received funding for and conducted parallel and serial research endeavors. However, the shared community research purpose allowed for the ability to assess pre- and post-test scores among teachers who participated in and implemented the various yoga and mindfulness-based programs.

In addition, the present study relied on self-report measures of teacher outcomes (e.g., classroom management, self-efficacy, burnout), which may be subject to response bias. However, use of self-report is appropriate for the scope of the present study, given our interest in specifically capturing teacher's *self-perceptions* regarding these constructs. Also, because the nature of the study was a research evaluation, single-item measures were used for the concepts related to teachers' perceptions of classroom experiences in order to be able to report back to schools on specific items of interest. The results from this preliminary study can provide directions for future research in this area. Future studies should include validated scales with composite scores for classroom experience, teacher self-efficacy, and skills, as opposed to single measures, Additionally, a control group or a delayed treatment group would allow for better understanding of the impact of the intervention. They should also assess student engagement and perceptions from the student perspective with parallel outcome measures. Additionally, with a larger sample size, more complex models can examine potential confounders such as teacher characteristics (such as number of years teaching), finer examination of teachers who exhibit high vs. low scores on ProQOL, and the effect of potential moderators such as teacher enthusiasm and teaching style [48-53] in order to determine differences in intervention effectiveness among those who score high vs. low on burnout, secondary stress, and satisfaction.

6. Conclusions

Despite these aforementioned limitations, the present study is the first to quantitatively assess the efficacy of the Kidding Around Yoga curriculum for improving teacher outcomes related to burnout in West Virginia educators during the COVID-19 pandemic, which represent a geographic and cultural context in which teacher burnout and resulting teacher turnover are particularly salient. Findings suggest that, following Kidding Around Yoga training, teachers report improvements on outcomes including classroom management, self-efficacy, and perceived support, which are key protective factors against burnout. Future research should implement experimental design with a larger sample in order to extend up on these preliminary findings, and evaluate whether Kidding Around Yoga represents an effective training tool to mitigate teacher burnout and turnover.

Acknowledgments

We would like to acknowledge the contributions of Marshall University and Try This WV, as well as the WV School of Osteopathic Medicine.

Author Contributions

Traci Jarrett, PhD is the primary author and was responsible for instrument development, data collection, analysis, and methods. Ilana Haliwa, PhD significantly contributed to the development of the instruments, data analysis plan, background and oversight of the manuscript writing and development. Jennifer Ludrosky, PhD contributed to the background and significance, data analysis plan, and interpreting the data for the manuscript. Ashley Mason, PT, DPT, ATC contributed to the development of the instruments, recruitment and implementation, and to the methods section of the manuscript. Gretchen Prather, PT, DPT, EdD contributed to the development of the instruments, recruitment and implementation, and to the methods section of the manuscript. Brittney Barlett contributed to recruitment and implementation and to the methods section of the manuscript. Amy Snodgrass provided technical oversight to the implementation and recruitment and contributed to the training and methods sections of the paper. Geri Dino, PhD contributed technical assistance with data collection and instrument development and contributed to the manuscript overall.

Funding

Funding was provided through two mechanisms. Try This WV was provided funding SAMHSA grant through WVDHHR Bureau for Behavioral Health (State Opioid Response) and the WV School for Osteopathic Medicine. Funding for Marshall University was established through a grant from the U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration [State Opioid Response (SOR) 1H79TI081724-01)] administered through the West Virginia Department of Health and Human Resources Bureau for Behavioral Health.

Competing Interests

The authors have declared that no competing interests exist.

References

1. World Health Organization. International statistical classification of diseases and related health problems-11th Revision [Internet]. Geneva: World Health Organization; 2019. Available from: https://icd.who.int/.
2. Salvagioni DA, Melanda FN, Mesas AE, González AD, Gabani FL, Andrade SM. Physical, psychological and occupational consequences of job burnout: A systematic review of prospective studies. PloS One. 2017; 12: e0185781.
3. Hakanen JJ, Bakker AB, Schaufeli WB. Burnout and work engagement among teachers. J Sch Psychol. 2006; 43: 495-513.
4. Koenig A, Rodger S, Specht J. Educator burnout and compassion fatigue: A pilot study. Can J Sch Psychol. 2018; 33: 259-278.
5. Maslach C, Schaufeli WB, Leiter MP. Job burnout. Annu Rev Psychol. 2001; 52: 397-422.
6. National Education Association. NEA survey: Massive staff shortages in schools leading to educator burnout; alarming number of educators indicating they plan to leave profession [Internet]. Washington, DC: National Education Association; 2022 [cited date 2022 November 16]. Available from: https://www.nea.org/about-nea/media-center/press-releases/nea-survey-massive-staff-shortages-schools-leading-educator.
7. Ingersoll RM, May H. The magnitude, destinations, and determinants of mathematics and science teacher turnover. Educ Eval Policy Anal. 2012; 34: 435-464.
8. Schonfeld IS. Stress in 1st-year women teachers: The context of social support and coping. Genet Soc Gen Psychol Monogr. 2001; 127: 133-168.
9. Herman KC, Hickmon-Rosa JE, Reinke WM. Empirically derived profiles of teacher stress, burnout, self-efficacy, and coping and associated student outcomes. J Posit Behav Interv. 2018; 20: 90-100.
10. Klusmann U, Richter D, Lüdtke O. Teachers' emotional exhaustion is negatively related to students' achievement: Evidence from a large-scale assessment study. J Educ Psychol. 2016; 108: 1193-1203.
11. Jennings PA, Greenberg MT. The prosocial classroom: Teacher social and emotional competence in relation to student and classroom outcomes. Rev Educ Res. 2009; 79: 491-525.
12. Oberle E, Schonert-Reichl KA. Stress contagion in the classroom? The link between classroom teacher burnout and morning cortisol in elementary school students. Soc Sci Med. 2016; 159: 30-37.
13. Lochmiller CR, Sugimoto TJ, Muller, PA. Teacher retention, mobility, and attrition in Kentucky Public Schools from 2008 to 2012. Washington, DC: Institute of Educational Sciences; 2016; ED562734.
14. West Virginia Board of Education. Education preparation task force report. Charleston, WV: West Virginia Department of Public Education; 2021.
15. Aloe AM, Amo LC, Shanahan ME. Classroom management self-efficacy and burnout: A multivariate meta-analysis. Educ Psychol Rev. 2014; 26: 101-126.
16. O'Neill SC, Stephenson J. The measurement of classroom management self-efficacy: A review of measurement instrument development and influences. Educ Psychol. 2011; 31: 261-299.

17. Owens MR, Brito-Silva F, Kirkland T, Moore CE, Davis KE, Patterson MA, et al. Prevalence and social determinants of food insecurity among college students during the COVID-19 Pandemic. Nutrients. 2020; 12: 2515.
18. PACEs Connection. West Virginia ACEs initiatives and actions [Internet]. Los Angeles, CA: PACEs Connection; [cited date 2022 April]. Available from: https://www.pacesconnection.com/g/state-aces-action-group/fileSendAction/fcType/0/fcOid/4740510834977265 57/filePointer/47405108354366626 8/fodoid/474051083543666212/2018%20-%20West%20Virginia.pdf.
19. Bridgland VM, Moeck EK, Green DM, Swain TL, Nayda DM, Matson LA, et al. Why the COVID-19 pandemic is a traumatic stressor. PloS One. 2021; 16: e0240146.
20. Sokal LJ, Eblie Trudel LG, Babb JC. Supporting teachers in times of change: The job demands-resources model and teacher burnout during the COVID-19 pandemic. Int J Contemp Educ. 2020; 3: 67-74.
21. Pressley T. Factors contributing to teacher burnout during COVID-19. Educ Res. 2021; 50: 325-327.
22. Bryant DJ, Oo M, Damian AJ. The rise of adverse childhood experiences during the COVID-19 pandemic. Psychol Trauma. 2020; 12: S193-S194.
23. Greenberg MT, Harris AR. Nurturing mindfulness in children and youth: Current state of research. Child Dev Perspect. 2012; 6: 161-166.
24. Meiklejohn J, Phillips C, Freedman ML, Griffin ML, Biegel G, Roach A, et al. Integrating mindfulness training into K-12 education: Fostering the resilience of teachers and students. Mindfulness. 2012; 3: 291-307.
25. Kabat-Zinn J. Wherever you go, there you are: Mindfulness meditation in everyday life. New York: Hyperion Press; 1994.
26. Abenavoli RM, Jennings PA, Greenberg MT, Harris AR, Katz DA. The protective effects of mindfulness against burnout among educators. Psychol Educ Rev. 2013; 37: 57-69.
27. Sharp Donahoo LM, Siegrist B, Garrett-Wright D. Addressing compassion fatigue and stress of special education teachers and professional staff using mindfulness and prayer. J Sch Nurs. 2018; 34: 442-448.
28. Flook L, Goldberg SB, Pinger L, Bonus K, Davidson RJ. Mindfulness for teachers: A pilot study to assess effects on stress, burnout, and teaching efficacy. Mind Brain Educ. 2013; 7: 182-195.
29. Sun J, Wang Y, Wan Q, Huang Z. Mindfulness and special education teachers' burnout: The serial multiple mediation effects of self-acceptance and perceived stress. Soc Behav Pers. 2019; 47: 1-8.
30. Haliwa I, Layman H, Coffman J, Snodgrass A, Santer P, Barlett B, et al. Perceptions and expectations of school-based professionals surrounding school-based mindfulness training in Appalachia during the COVID-19 pandemic: A qualitative study. Front Public Health. 2022; 10: 816494.
31. Kidding Around Yoga. Homepage [Internet]. Nokomis, FL: Kidding Around Yoga; [cited date 2022 April]. Available from: http://kiddingaroundyoga.com.
32. Chang ML, Engelhard Jr G. Examining the teachers' sense of efficacy scale at the item level with Rasch measurement model. J Psychoeduc Assess. 2016; 34: 177-191.
33. Cocca M, Cocca A. Testing a four-factor model for the teachers' sense of efficacy scale: An updated perspective on teachers' perceived classroom efficacy. Psicol Educ. 2022; 28: 39-46.

34. Daily SM, Mann MJ, Kristjansson AL, Smith ML, Zullig KJ. School climate and academic achievement in middle and high school students. J Sch Health. 2019; 89: 173-180.
35. Egeberg H, McConney A, Price A. Teachers' views on effective classroom management: A mixed-methods investigation in Western Australian high schools. Educ Res Policy Pract. 2021; 20: 107-124.
36. Loo R. A caveat on using single-item versus multiple-item scales. J Manag Psychol. 2002; 17: 68-75.
37. Gardner DG, Cummings LL, Dunham RB, Pierce JL. Single-item versus multiple-item measurement scales: An empirical comparison. Educ Psychol Meas. 1998; 58: 898-915.
38. The Concise ProQOL Manual. 2nd Ed. Pocatello, ID: ProQOL.org; 2010.
39. IBM Corp. Released 2021. IBM SPSS Statistics for Windows, Version 28.0. Armonk, NY: IBM Corp; 2021.
40. Payton JW, Wardlaw DM, Graczyk PA, Bloodworth MR, Tompsett CJ, Weissberg RP. Social and emotional learning: A framework for promoting mental health and reducing risk behavior in children and youth. J Sch Health. 2000; 70: 179-185.
41. Wang RH, Hsu HY, Lin SY, Cheng CP, Lee SL. Risk behaviours among early adolescents: Risk and protective factors. J Adv Nurs. 2010; 66: 313-323.
42. Tsouloupas CN, Carson RL, Matthews R, Grawitch MJ, Barber LK. Exploring the association between teachers' perceived student misbehaviour and emotional exhaustion: The importance of teacher efficacy beliefs and emotion regulation. Educ Psychol. 2010; 30: 173-189.
43. Mookkiah M, Kumar S. Yoga based intervention strategies in accelerating self-efficacy among primary school teachers. Ilkogretim Online. 2021; 20: 794-805.
44. Thornton B, Zunino B, Beattie J. Moving the dial: Improving teacher efficacy to promote instructional change. Education. 2020; 140: 171-180.
45. Kotowski SE, Davis KG, Barratt CL. Teachers feeling the burden of COVID-19: Impact on well-being, stress, and burnout. Work. 2022; 71: 407-415.
46. Madigan DJ, Kim LE. Towards an understanding of teacher attrition: A meta-analysis of burnout, job satisfaction, and teachers' intentions to quit. Teach Teach Educ. 2021; 105: 103425.
47. Hirshberg MJ, Flook L, Enright RD, Davidson RJ. Integrating mindfulness and connection practices into preservice teacher education improves classroom practices. Learn Instr. 2020; 66: 101298.
48. Aelterman N, Vansteenkiste M, Haerens L, Soenens B, Fontaine JR, Reeve J. Toward an integrative and fine-grained insight in motivating and demotivating teaching styles: The merits of a circumplex approach. J Educ Psychol. 2019; 111: 497-521.
49. Keller MM, Hoy AW, Goetz T, Frenzel AC. Teacher enthusiasm: Reviewing and redefining a complex construct. Educ Psychol Rev. 2016; 28: 743-769.
50. Kunter M, Frenzel A, Nagy G, Baumert J, Pekrun R. Teacher enthusiasm: Dimensionality and context specificity. Contemp Educ Psychol. 2011; 36: 289-301.
51. Moe A, Frenzel AC, Au L, Taxer JL. Displayed enthusiasm attracts attention and improves recall. Br J Educ Psychol. 2021; 91: 911-927.
52. Moè A, Katz I. Self-compassionate teachers are more autonomy supportive and structuring whereas self-derogating teachers are more controlling and chaotic: The mediating role of need satisfaction and burnout. Teach Teach Educ. 2020; 96: 103173.

53. Moe A, Katz I. Need satisfied teachers adopt a motivating style: The mediation of teacher enthusiasm. Learn Individ Differ. 2022; 99: 102203.