Original Paper

Wellness4Teachers Supportive Text Messaging Program Association With Observed Improvement in Psychological Symptoms Among Teachers in Canada: Single-Arm Prospective Longitudinal and Naturalistic Controlled Study

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Abstract

Background: Wellness4Teachers is a daily supportive text messaging program implemented to mitigate psychological distress and support teachers' well-being in Canada.

Objective: This study aimed to assess whether Wellness4Teachers can reduce the severity and prevalence of psychological issues and improve resilience among teachers in Alberta, Newfoundland and Labrador, and Nova Scotia.

Methods: This study used a single-arm prospective longitudinal design with a secondary exploratory naturalistic contemporaneous comparison. Teachers self-subscribed to the program for 6 months and completed web-based surveys. Longitudinal outcomes were assessed at baseline, 6 weeks, 3 months, and 6 months. The naturalistic comparison included an intervention group (IG), which received messages for 6 months and completed 6-month assessments between March 1 and June 30, 2023, and a control group (CG), which enrolled and completed baseline assessments during the same period before receiving messages. Standardized scales were used for assessing psychological symptoms. Likely generalized anxiety disorder (GAD), likely major depressive disorder (MDD), resilience, burnout, and stress were assessed using the Generalized Anxiety Disorder-7 (GAD-7) scale, the Patient Health Questionnaire-9 (PHQ-9), the Brief Resilience Scale, the Maslach Burnout Inventory-Educator Survey, and the Perceived Stress Scale-10 (PSS-10), respectively. Data were analyzed using SPSS. Paired- and independent-sample *t* tests were used to compare longitudinal changes and groups, respectively. McNemar and chi-square tests were used to examine categorical variables. Missing follow-up data were addressed using last observation carried forward, with sensitivity analyses comparing baseline scores with those at 6 weeks, 3 months, and 6 months. The group type (IG vs CG) was entered as a variable together with all demographic and work-related variables into 9 separate logistic regression models.

Results: In the longitudinal analysis, PSS-10, Maslach Burnout Inventory-Emotional Exhaustion subscale, PHQ-9, PHQ-9 item 3 (sleep disturbance), PHQ-9 item 9 (suicidal ideation/self-harm), and GAD-7 scores decreased significantly at 6 months, by 5.50% (mean difference [MD]=1.29, 95% CI 0.86-1.72), 4.48% (MD=1.67, 95% CI 0.43-2.92), 18.58% (MD=2.10, 95% CI 1.39-2.80), 17.54% (MD=0.30, 95% CI 0.15-0.44), 37.50% (MD=0.09, 95% CI 0.02-0.17), and 13.52% (MD=1.30, 95% CI 0.62-1.99), respectively. Likely MDD decreased from 55.2% (n=116) to 41.0% (n=86), a 14.2% reduction. In the exploratory contemporaneous comparison, the IG (n=166) had lower PSS-10 (6.04%; MD=–1.41, 95% CI –2.17 to –0.65), PHQ-9 (21.16%; MD=–2.33, 95% CI –3.59 to –1.06), and GAD-7 (22.48%; MD=–2.19, 95% CI –3.39 to –0.98) scores than the CG (n=152). Likely MDD and GAD prevalence were 20.6% and 20.3% lower, respectively. Adjusted analyses showed IG status was associated

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with lower odds of high stress (odds ratio [OR] 0.42, 95% CI 0.19-0.95), likely MDD (OR 0.47, 95% CI 0.28-0.81), and likely GAD (OR 0.37, 95% CI 0.21-0.64).

Conclusions: Wellness4Teachers was associated with improvements in several psychological outcomes over 6 months and may offer a promising approach to support teachers' psychological well-being.

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KEYWORDS

anxiety; burnout; depression; educators; resilience; stress; teachers; text messages; Wellness4Teachers

Introduction

Background

Teachers play diverse roles in educating students beyond simple curriculum delivery. Teachers also serve as mentors, counselors, and facilitators of social and emotional learning and work to ensure an enriched, supportive learning environment that fosters students' overall development and well-being [1]. As important a role as teachers have, their work exposes them to numerous occupational stressors, which can result in teachers feeling overwhelmed. Key stressors include demanding workloads, challenging student behaviors and classroom management, and poor working conditions (insufficient resources and lack of support from the administration) [2]. These factors can contribute to high levels of stress, which can lead to burnout, decreased job satisfaction, and psychological health impacts such as anxiety and depression [3,4]. Chronic stress occurs when persistent external pressures challenge an individual's ability to cope effectively, leading to significant physical and emotional strain, which can manifest in various physical, emotional, and psychological symptoms [5-8].

When stress becomes chronic or unmanageable, it can evolve into burnout—a state of exhaustion, cynicism, and reduced effectiveness that impacts mental and physical health [9]. Burnout is characterized by 3 dimensions: emotional exhaustion (feeling overextended physically and emotionally), cynicism (a cold, detached attitude toward work and people at work), and inefficacy (increased sense of inadequacy) [9,10]. Among teachers, burnout is a significant and growing concern that can exacerbate emotional distress and psychological difficulties, contributing to a lack of professional fulfillment [7]. Burnout can also impact teachers' health, lifestyle, coping ability, and the quality of education they provide, as well as their personal functioning or lifestyle [10]. High stress, high burnout, and low coping ability among teachers have been associated with poor student outcomes, and teachers with high levels of anxiety also struggle with classroom management [11]. Individuals vary in how they respond to stress and burnout, and resilience acts as a protective factor or buffer, helping them to cope with stress, anxiety, and depression. Among the general population, research has documented a moderate negative relationship between resilience and psychological distress [12]. Higher resilience has been reported to be significantly associated with reduced stress, improved mental health, and better well-being [13].

Resilience is a complex concept that refers to the adaptive capacity to withstand, adapt to, and recover from adversity, stress, or trauma [14]. It can be developed at various levels, including individual, community, and institutional levels, and encompasses a range of adaptive or positive processes, including coping strategies (problem-solving and emotional regulation), social support (relational connections and counseling), cognitive restructuring or positive reframing (including finding meaning), creative expression, and practicing self-compassion that can enhance resilience by fostering strength and adaptability [15]. Variation in how individuals respond to similar stressors suggests that resilience can be inhibited by the detrimental effects of stress, adversity, or biological factors, and personal history, coping mechanisms, and psychological makeup can influence differing levels of resilience [14]. Resilience requires self-awareness and internal coherence, which are activated by personal development; thus, it requires continuous cultivation throughout one's lifespan and opportunities for growth [16].

Depression and anxiety are prevalent mental health issues that can significantly impact the well-being and professional effectiveness of teachers [5]. Published research reported that teachers with depression self-reported higher levels of perceived stress, anxiety, and lower quality of life [17]. Higher levels of depressive symptoms have been documented among teachers compared to other professionals, with factors such as job adversity and lack of support being key contributors [18]. Anxiety symptoms are prevalent among teachers, ranging from 38% to 41.2%, and are usually exacerbated among those working in high-stress environments [5]. The impact of anxiety and depression on educators extends far beyond their well-being and affects their professional performance, productivity, competence, and student achievement [19]. Based on this, it is important to support teachers' psychological well-being, as doing so enhances their professional role and, invariably, students' achievement.

Recently, there has been growing evidence of the use and feasibility of mobile technology in closing psychological treatment gaps by fostering resilience and enhancing overall health and well-being [20]. The use of eHealth technology has been popular over the years, even among the older population, where therapist-guided internet-delivered cognitive behavioral therapy (CBT) significantly lowered the scores on the Patient Health Questionnaire-9 (PHQ-9) for depression symptoms and Generalized Anxiety Disorder-7 (GAD-7) for anxiety symptoms in the intervention group (IG) compared to the control group (CG) at postintervention [21]. Various mobile health apps, such as Psychological First Aid and the Behavioural Health Disaster Response App, have also been adopted and assessed for their efficacy, feasibility, and acceptability as interventions during

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disasters [22]. Several interventions have also been explored, particularly to address burnout and stress, which usually lead to anxiety or depression among teachers. However, many of these interventions are limited by time, cost, long wait times, and geographic location barriers to access [19]. The most popularly studied interventions were mindfulness-based interventions alone or in combination with CBT or the behavioral and cognitive-behavioral domains [19,23]. For example, Cultivating Awareness and Resilience in Education (CARE for Teachers) is a mindfulness-based professional development program designed to promote teachers' social and emotional competence and improve the quality of classroom interactions. It had significant positive effects on adaptive emotion regulation, mindfulness, and psychological distress [24]. Though mindfulness and other interventions reported positive outcomes, they presented the issue of time and geographical location constraints for some teachers [19], and only a few online programs are focusing on the mental health of teachers with limited evidence of effectiveness [25]. Digital mental health support, specifically supportive text messaging interventions, has been reported to mitigate symptoms of anxiety and depression among patients with mental health problems who are receiving formal psychiatric care [26], among young adults [27], and among first responders [28]. Text message–delivered health behavior intervention also led to a significant reduction in glycated hemoglobin in adults with type 2 diabetes mellitus [29]. Additionally, text-message interventions have been shown to be effective in promoting vaping cessation among young adults [30].

Wellness4Teachers Program

Based on existing evidence of the effectiveness of mobile text messaging interventions in diverse contexts, the Wellness4Teachers program was developed and implemented to support teachers in Canada during the 2022 to 2023 academic year. Wellness4Teachers [31] is a self-subscription daily supportive text message intervention program proposed to address stress, burnout, anxiety, and depression, build resilience, and improve professional fulfillment in educators. Teachers can subscribe to Wellness4Teachers by texting "TeachWell" to a designated phone number and receive daily CBT-based text messages with or without embedded links to mental health literacy resources or information for 6 months. The Wellness4Teachers application sent unidirectional, noninteractive psychological well-being messages to teachers' mobile phones. Subscribers were informed of the noninteractive nature of the supportive messaging program through the first message they received after subscription. The daily supportive messages delivered through the Wellness4Teachers program were crafted by psychiatrists, mental health therapists, and psychologists and reviewed by education specialists. The messages are based on CBT principles, and teachers received different messages daily from a bank of messages for 6 months. Sample messages are found below; other examples can be accessed in the protocol [31].

> *Take it one day at a time. Do not expect too much too soon. Set realistic, doable daily goals. Take part in activities that make you feel better. Seek out people who are supportive and helpful.*
>
> *Stress and burnout can lead to poor physical and mental well-being, and it may affect one's health. Try to manage your time effectively and take breaks when needed.*
>
> *Mistakes are facts of life; the response to error counts. Turn your adversities into opportunities. Try new things that will bring positive outcomes.*

Study Aim

This study assesses whether the Wellness4Teachers daily supportive text messaging program can reduce the severity and prevalence of stress, burnout, anxiety, and depression symptoms and improve resilience among teachers in Alberta, Newfoundland and Labrador, and Nova Scotia.

Methods

Study Setting

Canada is a North American country with 10 provinces and 3 territories and a population of 40,769,890 in January 2024 [32]. This study was conducted in 3 provinces: Newfoundland and Labrador, Alberta, and Nova Scotia. Newfoundland and Labrador Schools is a group tasked with educating all English-speaking students at kindergarten to grade 12 public schools and has over 10,000 employees [33,34]. Nova Scotia has approximately 10,000 public school teachers represented by the Nova Scotia Teachers Union [35], while Alberta has 32,523 full- and part-time teachers [36].

Study Design

This study used longitudinal and naturalistic controlled designs. The longitudinal component examined outcomes in Wellness4Teachers subscribers who completed surveys at baseline and 6 months. An intention-to-treat analysis was conducted, where the last follow-up observation—either 6 weeks or 3 months—was carried forward to the 6-month mark for subscribers who did not complete the final 6-month survey. The last-observation-carried-forward (LOCF) approach was selected to maximize the use of available longitudinal data. However, this approach assumes stable outcomes after dropout and may underestimate variability or introduce bias, warranting cautious interpretation of the estimated intervention effects. The naturalistic comparison was constructed using contemporaneously collected outcome assessments rather than by prospectively following an untreated CG for 6 months. The IG comprised subscribers who had enrolled approximately 6 months earlier, received the Wellness4Teachers daily supportive text messages for 6 months, and completed their 6-month outcome assessment between March 1 and June 30, 2023. The naturalistic CG comprised new subscribers who enrolled between March 1 and June 30, 2023, and completed their baseline assessment before receiving any supportive text messages. Thus, outcome measurements for both groups were obtained during the same calendar period, although the groups differed in elapsed time since program enrollment and intervention exposure. This design was intended to provide a contemporaneous untreated reference group while reducing potential seasonal and other calendar-time influences. It was not intended to constitute a conventional longitudinal controlled

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trial in which intervention and control participants are followed over matched elapsed periods.

Ethical Considerations

The study protocol was approved by the University of Alberta Reviews and Ethics Board (Pro00086163) and the Dalhousie University Ethics Review Board (REB #2023-6840), and the study was conducted in accordance with ethical principles for medical research involving human subjects as outlined in the Declaration of Helsinki. Informed consent was implied when subscribers completed the online survey and submitted responses, as approved by the ethics review boards. Given the noninteractive, minimal-risk nature of the digital intervention, implied consent was considered ethically appropriate. Participants were informed that enrollment and continued participation indicated their voluntary consent to participate in the study.

Data Collection

The published study protocol provides a detailed description of data collection procedures and the survey instruments [31]. The Wellness4Teachers support program was available to all teachers in the participating provinces and was advertised by the teachers' associations or unions in these provinces. Teachers in these provinces could enroll in the Wellness4Teachers program by texting "TeachWell" to a specified telephone number. The program was self-subscription, and participation in the survey was voluntary.

The first message from the Wellness4Teachers program welcomes subscribers to the service and invites them to complete a baseline survey. Subscribers receive additional invitations via links in text messages to complete follow-up surveys at 6 weeks, 3 months, and 6 months. Teachers who subscribed could decide to opt in or out of completing the associated survey at baseline or at other time points (6 weeks, 3 months, and 6 months). Participation in the Wellness4Teachers service to receive daily supportive text messages was independent of survey completions, and subscribers could opt out at any time by texting "Stop TeachWell" to the designated phone number. Program messages were delivered by a computer program at 9:00 AM Mountain Time each day. The Wellness4Teachers surveys captured various sociodemographic and work-related data provided as categorical variables (age, sex at birth, relationship status, school setting, major role in school, average class size, and teaching experience in years) and standardized scales for assessing psychological symptoms, including the Perceived Stress Scale-10 (PSS-10; a score of ≥27 indicates high stress) [37], the GAD-7 (a score of ≥10 indicates likely generalized anxiety disorder) [38], the PHQ-9 (a score ≥10 indicates likely major depressive disorder [MDD]) [39], the Brief Resilience Scale (BRS; mean scores ranging from 1.00 to 2.99 indicate low resilience and a score of ≥3.00 suggests normal to high resilience) [40], and the Maslach Burnout Inventory-Educator Survey (MBI-ES) [41,42]. The MBI-ES contains a 22-item instrument that measures emotional exhaustion (MBI-EE subscale scores ≥27 indicate high emotional exhaustion), depersonalization (MBI-DP subscale scores ≥13 indicate high depersonalization), and personal accomplishment (MBI-PA subscale). The psychometric properties of the PSS-10, MBI-ES, and BRS have been described in a related publication [7].

The GAD-7 questionnaire has a Cronbach α of 0.92 and is used to assess the self-reported levels of anxiety in respondents in the 2 weeks prior to assessment [38]. The PHQ-9 has a Cronbach α of 0.89 and is used to assess the severity of depression symptoms [39]. Data for the longitudinal trial were collected between September 1, 2022, and April 1, 2024, and data for the naturalistic controlled study were collected between March 1, 2023, and June 30, 2023. The survey took, on average, 15 minutes to complete, and subscribers were not offered incentives for completing the surveys.

Protocol Deviation

This study deviated from the protocol published in *JMIR Research Protocols* (2022) [31] in some respects. First, the study was expanded to include a third province, and the research ethics board approval was subsequently updated under a revised approval number. Second, the sample size calculation was modified from that specified in the published protocol to reflect the revised study design and anticipated recruitment. These deviations were made during study implementation in response to changes in the study context, feasibility, and available data, and are reported here to ensure transparency regarding the distinction between the prespecified protocol and the final study design. The planned qualitative key informant interviews have not yet been conducted and therefore do not form part of the present evaluation. When feasibly implemented, the qualitative evaluation will be published separately in a subsequent manuscript with its relationship to this study described accordingly.

Outcome Measures

Primary outcome measures of interest included the psychological scale scores and symptom prevalence rates across specific evaluation time points on the psychological scales (PSS-10, MBI-ES subscales, PHQ-9, third question in PHQ-9 assessing severity of sleep problems, ninth question in PHQ-9 assessing severity of suicidal thoughts, GAD-7, and the BRS) at baseline and 6 months for the longitudinal study and between the IG and the CG in the naturalistic trial. Other primary outcome measures of interest for this study were differences in the prevalence of psychological symptoms (high stress, high emotional exhaustion, high depersonalization, low professional accomplishment, likely MDD, sleep disturbance, suicidal ideation/thoughts of self-harm, likely generalized anxiety disorder, and low resilience) from baseline to 6 months for the longitudinal study and between the IG (6-month prevalence) and the CG (baseline prevalence) for the naturalistic trial.

A secondary outcome of interest was to determine whether, when controlling for demographic variables, the daily supportive text messages would contribute to lower odds of psychological symptoms in subscribers for participants in the naturalistic controlled study.

Hypothesis

We hypothesized that for subscribers to Wellness4Teachers who complete surveys at the 2 time points, there would be at

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least 20% lower mean scores on the psychological scales at 6 months compared with their baseline scores. We also hypothesized that subscribers to Wellness4Teachers in the IG would have at least 20% lower mean scores on the psychological scales compared with corresponding mean scores for the CG participants. These hypotheses are based on the greater than 20% reduction in anxiety symptom scores from baseline to 3 months in the general population subscribers of Text4Hope [43] and the more than 20% decrease in depression symptom scores in the treatment group compared to the CG observed in two randomized controlled trials in Ireland and Canada [44,45]. We further hypothesized that the prevalence of each psychological symptom would be 20% lower at 6 months compared to the baseline for the longitudinal study and 20% lower in the IG compared with the CG in the naturalistic controlled study. Finally, we hypothesize that being in the IG would independently predict the absence of each psychological symptom when all the demographic variables are controlled for in a logistic regression model.

Sample Size Considerations

For the longitudinal study, we determined using an online script [46,47] that a sample size of 82 would be sufficient to detect differences in the baseline and sixth-month prevalence for emotional exhaustion with an 80% power, assuming a 90% prevalence of emotional exhaustion at baseline, a hypothesized difference of 20% between the baseline and sixth-month prevalence, a 2-sided significance of 5% for detecting a difference, a correlation between paired observations of 0%, and after applying continuity correction.

For the naturalistic controlled study, to detect a 20% difference in the prevalence of emotional exhaustion between the IG and the CG, based on a power of 80% (β=.2) and a 2-sided significance level of α=.05, and assuming a 90% prevalence of emotional exhaustion at baseline for the CG, we estimated using an online script [48] that a sample size of 73 per group will be sufficient.

Statistical Analysis

Data were analyzed using SPSS for Windows (version 28; IBM Corp) [49]. Descriptive statistics were used to summarize participants' characteristics and psychological scale scores. For the longitudinal study, sociodemographic characteristics and the prevalence and severity (mean scores) of psychological symptoms were examined between the participants who completed the baseline survey and at least one follow-up survey and participants who completed only the baseline survey, using a chi-square or the independent-sample *t* test. A comparison of baseline psychological scores between follow-up completers and noncompleters was conducted to assess potential attrition bias and determine whether participants who remained in the study differed in their initial psychological status from those who did not complete any follow-up survey.

The paired sample *t* test and the McNemar test, respectively, were used to assess differences in mean scores of each psychological scale and the prevalence of each psychological symptom from baseline to 6 months for subscribers who completed surveys at 2 time points, including at baseline. The LOCF approach, consistent with the prespecified analytic plan, was used to impute 6-month outcomes for subscribers who completed only the 6-week and/or 3-month follow-up surveys. Sensitivity analyses were conducted using complete-case paired-samples *t* tests to compare mean psychological scale scores at baseline with those at 6 weeks, 3 months, and 6 months, including only participants with available data at both time points to assess within-participant changes over time.

For the naturalistic controlled study, demographic characteristics were examined between the 2 study groups, IG and CG. For the main study outcomes, we examined the prevalence of clinically meaningful psychological indicators between the IG and CG to ascertain if there were differences using the chi-square test. In addition, the differences in mean scores for each psychological scale between the IG and CG were also examined using independent-sample *t* tests. Results were summarized by numbers and percentages and compared by chi-square analysis with a 2-tailed criterion (α<.01 after Bonferroni correction). Bonferroni correction was applied by dividing the traditional statistically significant level of .05 by the total number of variables being compared. Percentage changes in mean scores were calculated by dividing the mean score difference by the baseline mean score and multiplying it by a hundred. There was no imputation of missing data, except for the longitudinal analysis, where we applied the LOCF, and the total numbers reported represent the total responses recorded for each variable.

Independent-sample *t* tests and chi-square tests were conducted using baseline data to respectively compare the mean psychological scale scores and sociodemographic characteristics for participants who completed the follow-up surveys at each time point with those who did not complete the follow-up survey for the given time point.

To assess the independent impact of Wellness4Teachers daily supportive messages on the presence of psychological symptoms on subscribers at 6 months, all demographic predictors and "IG" variables were imputed into separate binary logistic regression models. The odds ratios (ORs) from the regression models were examined to determine the associations between "receipt of the daily support" and the likelihood for participants to self-report symptoms consistent with the psychological symptoms while controlling for sociodemographic variables (gender, ethnicity, relationship status, and housing status) in the respective models. Correlation analyses were performed before the regression analysis to rule out strong correlations (r_s≥0.7) among predictor variables.

Results

Longitudinal Study Outcomes

Figure 1 shows that response rates for the baseline and for 6 months applying an intention-to-treat analysis were 43.29% (803/1855) and 12% (222/1855), respectively. Of the 1855 subscribers of Wellness4Teachers who completed the baseline survey, only 222 subscribers completed the baseline and at least one follow-up survey and were included in the longitudinal outcome analysis.

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Figure 1. Study flowchart.

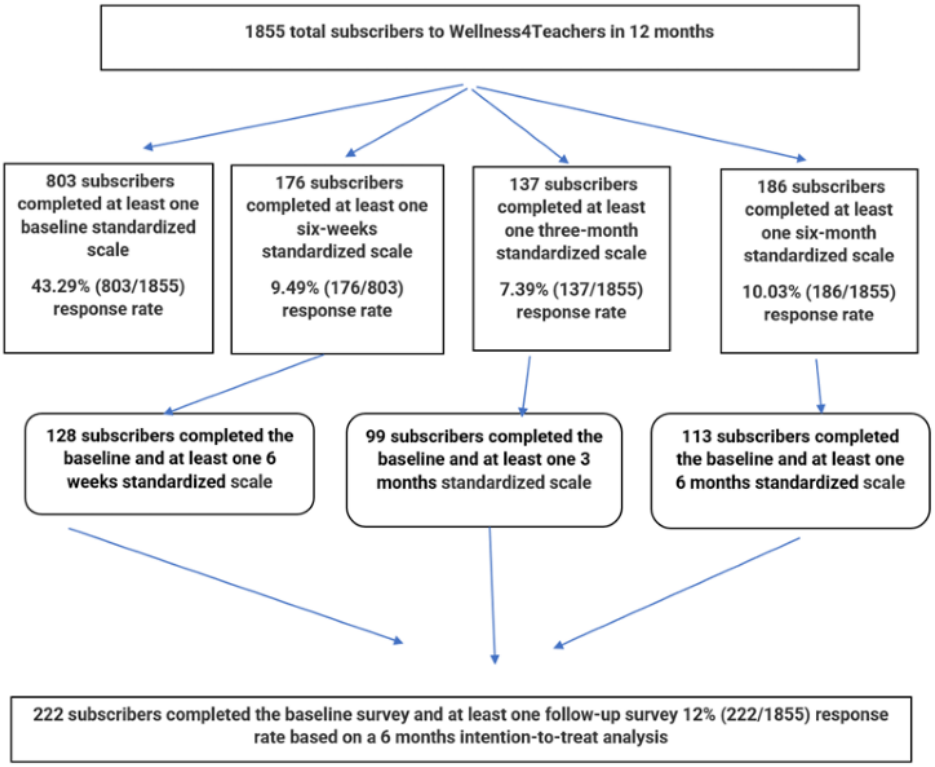


Table S1 in Multimedia Appendix 1 compared the distribution of demographic and work-related variables and the prevalence and severity of psychological symptoms for participants who completed both baseline and at least one follow-up survey and participants who completed only the baseline survey.

Applying a Bonferroni-corrected significant *P* value of ≤.01 (derived by dividing 0.05 by the total number of variables and approximating to 2 decimal places) for the demographic and work-related variables and the psychological variables, Table S1 in Multimedia Appendix 1 indicates that participants who completed the baseline and at least one follow-up survey were similar with respect to all the demographic and work-related characteristics and psychological variables.

For subscribers who completed the baseline and at least one follow-up survey, a paired-samples *t* test was run to assess the changes in mean scores on psychological scales, as shown in Tables 1-4.

Applying a Bonferroni corrected significant *P* value of ≤.01, Table 1 indicates that based on last follow-up observation carried forward, the mean scores on the PSS-10, the PHQ-9, the third and ninth question of the PHQ-9 the GAD-7 and the MBI-EE subscale were significantly lower by 5.51%, 18.58%, 17.54%, 37.5%, 13.52% and 4.84% at 6 months compared to baseline respectively for subscribers who completed the baseline survey and at least one follow-up survey. Using a Bonferroni-corrected significance threshold of *P*≤.01, sensitivity analyses of paired data demonstrated statistically significant changes from baseline for the PSS-10, PHQ-9, and PHQ-9 item 3 (sleep disturbance), at 6 weeks (4.28%, 10.79%, and 14.97%, respectively; Table 2), and there was no significance for any psychological issues at 3 months (Table 3). Among subscribers who completed both the baseline and 6-month surveys, paired-data sensitivity analysis showed statistically significant reductions in mean scores for PSS-10, the MBI-EE subscale, the PHQ-9, PHQ-9 item 3 (sleep disturbance), and GAD-7 (5.87%, 7.77%, 24.98%, 17.06%, and 19.98%, respectively; Table 4). Notably, independent-sample *t* test and chi-square test comparing the baseline psychological scale scores and the sociodemographic characteristics respectively between follow-up completers and noncompleters across each time point (Table S2 in Multimedia Appendix 2 and Table S3 in Multimedia Appendix 3) revealed no statistically significant differences between the 2 groups.

Changes in the prevalence of psychological symptoms of subscribers who completed the baseline and at least one follow-up survey were assessed using the McNemar test, as shown in Table 5.

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Table 1. Changes in psychological scale scores from baseline to 6 months: last follow-up observation carried forward results.

Measure	Sample size, n	Baseline score, mean (SD)	Sixth-month score, mean (SD)	Change from baseline (%)	Mean difference (95% CI)	*P* value	*t* test (*df*)	Effect size (Cohen *d*)
PSS-10[a]	216	23.43 (3.02)	22.13 (3.17)	–5.51	1.29 (0.86 to 1.72)	<.001	5.89 (215)	0.40
MBI-EE[b] subscale	215	34.53 (10.54)	32.86 (11.85)	–4.84	1.67 (0.43 to 2.92)	.01	2.66 (214)	0.18
MBI-DP[c] subscale	215	8.05 (6.27)	7.97 (5.93)	–0.90	0.08 (–0.64 to 0.80)	.82	(0.23 214)	0.02
MBI-PA[d] subscale	214	35.30 (6.83)	35.31 (7.06)	+0.02	0.01 (–0.82 to 0.80)	.98	–0.02 (213)	–0.002
PHQ-9[e]	210	11.30 (5.89)	9.20 (5.61)	–18.58	2.10 (1.39 to 2.80)	<.001	5.87 (209)	0.41
PHQ-9 item 3 (severity of sleep disturbance)	210	1.71 (1.01)	1.42 (1.01)	–17.54	0.30 (0.15 to 0.44)	<.001	4.10 (209)	0.28
PHQ-9 item 9 (suicidal ideation/thoughts of self-harm)	210	0.24 (0.59)	0.15 (0.47)	–37.50	0.09 (0.02 to 0.17)	<.001	2.38 (209)	0.16
GAD-7[f]	210	9.61 (5.71)	8.30 (5.56)	–13.53	1.30 (0.62 to 1.99)	<.001	3.78 (209)	0.26
BRS[g]	209	3.04 (0.94)	3.12 (0.93)	+2.63	0.08 (–0.18 to 0.03)	.14	–1.50 (208)	–0.10

[a]PSS-10: Perceived Stress Scale-10.

[b]MBI-EE: Maslach Burnout Inventory-Emotional Exhaustion.

[c]MBI-DP: Maslach Burnout Inventory-Depersonalization.

[d]MBI-PA: Maslach Burnout Inventory-Personal Accomplishment.

[e]PHQ-9: Patient Health Questionnaire-9.

[f]GAD-7: Generalized Anxiety Disorder-7.

[g]BRS: Brief Resilience Scale.

Table 2. Changes in psychological scale scores from baseline to 6 weeks: a paired-sample analysis.

Measure	Sample size, n	Baseline score, mean (SD)	Sixth-week score, mean (SD)	Change from baseline (%)	Mean difference (95% CI)	*P* value	*t* test (*df*)	Effect size (Cohen *d*)
PSS-10[a]	128	23.38 (2.88)	22.38 (2.88)	4.28	1.00 (0.49 to 1.51)	<.001	3.87 (127)	2.93
MBI-EE[b] subscale	122	34.84 (10.66)	34.29 (11.11)	2.73	0.95 (–1.51 to 3.42)	.47	0.73 (121)	8.49
MBI-DP[c] subscale	123	7.98 (6.27)	7.57 (5.72)	15.91	1.27 (–0.37 to 2.91)	.38	0.88 (122)	5.22
MBI-PA[d] subscale	123	36.75 (6.18)	37.09 (5.95)	0.93	–0.34 (–2.02 to 1.34)	.87	0.17 (122)	5.33
PHQ-9[e]	118	11.03 (5.51)	9.85 (5.22)	10.79	1.19 (0.26 to 2.11)	.01	2.54 (117)	5.08
PHQ-9 item 3 (severity of sleep disturbance)	118	1.67 (1.02)	1.42 (1.00)	14.97	0.25 (0.06 to 0.44)	.01	2.66 (117)	1.04
PHQ-9 item 9 (suicidal ideation/thoughts of self-harm)	118	0.21 (0.58)	0.14 (0.46)	33.33	0.07 (–0.03 to 0.17)	.17	1.38 (117)	0.53
GAD-7[f]	117	9.92 (5.40)	9.51 (5.66)	4.13	0.41 (–0.44 to 1.26)	.34	0.95 (116)	4.65
BRS[g]	115	2.96 (0.91)	3.03 (0.90)	2.03	–0.06 (–0.19 to 0.06)	.33	–0.98 (114)	0.68

[a]PSS-10: Perceived Stress Scale-10.

[b]MBI-EE: Maslach Burnout Inventory-Emotional Exhaustion.

[c]MBI-DP: Maslach Burnout Inventory-Depersonalization.

[d]MBI-PA: Maslach Burnout Inventory-Personal Accomplishment.

[e]PHQ-9: Patient Health Questionnaire-9.

[f]GAD-7: Generalized Anxiety Disorder-7.

[g]BRS: Brief Resilience Scale.

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Table 3. Changes in psychological scale scores from baseline to 3 months: a paired-sample analysis.

Measure	Sample size, n	Baseline score, mean (SD)	Third-month score, mean (SD)	Change from baseline (%)	Mean difference (95% CI)	*P* value	*t* test (*df*)	Effect size (Cohen *d*)
PSS-10[a]	99	23.10 (3.05)	22.43 (3.10)	2.90	0.67 (.02 to 1.31)	.04	2.05 (98)	3.24
MBI-EE[b] subscale	95	35.31 (9.93)	33.64 (11.09)	4.70	1.66 (–0.22 to 3.55)	.08	1.75 (94)	9.25
MBI-DP[c] subscale	95	8.28 (6.65)	8.00 (6.32)	3.38	0.28 (–0.76 to 1.32)	.59	0.54 (94)	5.11
MBI-PA[d] subscale	95	34.95 (6.26)	34.86 (6.81)	0.23	0.08 (–1.04 to 1.20)	.88	0.15 (94)	5.50
PHQ-9[e]	93	11.02 (6.04)	9.77 (5.62)	11.34	1.25 (0.23 to 2.27)	.02	2.43 (92)	4.95
PHQ-9 item 3 (severity of sleep disturbance)	93	1.67 (1.00)	1.41 (0.96)	15.57	0.26 (0.04 to 0.47)	.02	2.39 (92)	1.04
PHQ-9 item 9 (suicidal ideation/thoughts of self-harm)	93	0.18 (0.51)	0.15 (0.53)	16.67	–0.03 (–0.07 to 0.13)	.52	0.65 (92)	0.48
GAD-7[f]	93	9.30 (5.85)	8.18 (5.29)	12.04	1.12 (0.20 to 2.04)	.02	2.41 (92)	4.48
BRS[g]	92	2.99 (0.96)	3.14 (0.94)	5.02	–0.15 (–0.30 to –0.00)	.04	–2.04 (91)	0.72

[a]PSS-10: Perceived Stress Scale-10.

[b]MBI-EE: Maslach Burnout Inventory-Emotional Exhaustion.

[c]MBI-DP: Maslach Burnout Inventory-Depersonalization.

[d]MBI-PA: Maslach Burnout Inventory-Personal Accomplishment.

[e]PHQ-9: Patient Health Questionnaire-9.

[f]GAD-7: Generalized Anxiety Disorder-7.

[g]BRS: Brief Resilience Scale.

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Table 4. Changes in psychological scale scores from baseline to 6 months: a paired-sample analysis.

Measure	Sample size, n	Baseline score, mean (SD)	Sixth-month score, mean (SD)	Change from baseline (%)	Mean difference (95% CI)	*P* value	*t* test (*df*)	Effect size (Cohen *d*)
PSS-10[a]	113	23.33 (2.63)	21.96 (3.18)	5.87	1.37 (–0.76 to 1.98)	<.001	4.43 (112)	3.29
MBI-EE[b] subscale	110	34.09 (10.34)	31.44 (11.84)	7.77	2.65 (0.90 to 4.41)	<.001	3.00 (109)	9.29
MBI-DP[c] subscale	110	8.27 (5.98)	7.68 (5.82)	7.13	0.59 (–0.50 to 1.68)	.29	1.07 (109)	5.77
MBI-PA[d] subscale	109	34.72 (7.13)	35.04 (7.34)	0.92	–0.32 (–1.60 to 0.96)	.62	–0.50 (108)	6.75
PHQ-9[e]	105	11.61 (6.12)	8.70 (5.60)	24.98	2.90 (1.86 to 3.95)	<.001	5.52 (104)	5.39
PHQ-9 item 3 (severity of sleep disturbance)	105	1.70 (1.01)	1.42 (1.04)	17.06	0.29 (0.09 to 0.49)	.01	2.83 (104)	1.04
PHQ-9 item 9 (suicidal ideation/thoughts of self-harm)	105	0.28 (0.66)	0.16 (0.44)	39.29	0.11 (–0.01 to 0.24)	.06	1.87 (104)	0.63
GAD-7[f]	104	9.41 (5.32)	7.54 (4.92)	19.98	1.88 (0.88 to 2.87)	<.001	3.73 (103)	5.13
BRS[g]	103	3.00 (0.92)	3.17 (0.92)	6.00	–0.18 (–0.34 to –0.02)	.03	–2.19 (102)	0.83

[a]PSS-10: Perceived Stress Scale-10.

[b]MBI-EE: Maslach Burnout Inventory-Emotional Exhaustion.

[c]MBI-DP: Maslach Burnout Inventory-Depersonalization.

[d]MBI-PA: Maslach Burnout Inventory-Personal Accomplishment.

[e]PHQ-9: Patient Health Questionnaire-9.

[f]GAD-7: Generalized Anxiety Disorder-7.

[g]BRS: Brief Resilience Scale.

Table 5. McNemar test results indicating changes in the prevalence of psychological symptoms among Wellness4Teachers intervention group subscribers from baseline to 6 months.

Psychological symptoms	Prevalence		Change from baseline (%)	*P* value
	Baseline, n (%)	6 months, n (%)		
High stress	32 (14.8)	19 (8.8)	6.0	.03
High emotional exhaustion	166 (77.2)	151 (70.2)	7.0	.02
High depersonalization	52 (24.2)	48 (22.3)	1.9	.64
Low professional accomplishment	80 (37.4)	80 (37.4)	0.0	>.99
Likely major depressive disorder	116 (55.2)	86 (41.0)	14.2	>.001
Sleep disturbance	183 (87.1)	169 (80.5)	6.6	.04
Suicidal ideation/thoughts of self-harm	36 (17.1)	23 (11.0)	6.1	.04
Likely generalized anxiety disorder	96 (45.7)	78 (37.1)	8.6	.03
Low resilience	95 (45.5)	84 (40.2)	5.3	.18

Applying a Bonferroni-corrected significant *P* value of ≤.01, Table 5 indicates that the prevalence of likely MDD was significantly lower by 14.2% at 6 months compared to baseline for subscribers who completed the baseline survey and at least one follow-up survey. There was no significant difference in prevalence for the other variables at baseline and 6 months.

Naturalistic Controlled Study

The total number of teachers who completed the Wellness4Teachers survey either at baseline or 6 months between March 1 and June 30, 2023, was 318, with 152 (47.8%) in the CG and 166 (52.2%) in the IG, as illustrated in Table 6. Table S4 in Multimedia Appendix 4 illustrates the demographic characteristics of respondents in the CG and IG. However, it is worth noting that not all the participants who completed the follow-up surveys completed the demographic survey.

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Table 6. Independent-sample t test comparing psychological outcomes between the intervention group (IG) and control group (CG) participants.

Psychological scale/subscale	CG score (n=152), mean (SD)	IG score (n=166), mean (SD)	Difference in mean scores (%)	Mean difference (95% CI)	*P* value	*t* test (*df*)	Effect size (Hedges *g*)
PSS-10[a]	23.32 (3.16)	21.92 (3.67)	–6.04	–1.41 (–0.65 to –2.17)	<.001	3.65 (316)	0.41
MBI-EE[b] subscale	34.59 (10.91)	31.36 (12.32)	–9.37	–3.24 (–0.66 to –5.81)	.01	2.47 (316)	0.28
MBI-DP[c] subscale	8.57 (6.54)	7.77 (5.72)	–9.45	–0.81 (–0.55 to –2.16)	.24	1.17 (316)	0.13
MBI-PA[d] subscale	34.28 (7.08)	35.55 (7.34)	+3.70	+1.27 (2.87 to 0.32)	.12	–1.57 (316)	–0.18
PHQ-9[e]	11.01 (5.97)	8.69 (5.47)	–21.16	–2.33 (–1.06 to –3.59)	<.001	3.63 (316)	0.41
PHQ-9 item 3 (severity of sleep problems)	1.57 (1.15)	1.45 (1.05)	–8.28	–0.13 (0.12 to 0.37)	.31	1.03 (316)	0.12
PHQ-9 item 9 (severity of suicidal thoughts)	0.20 (0.49)	0.13 (0.38)	–40.0	0.08 (0.02 to 0.17)	.12	1.57 (316)	0.18
GAD-7[f]	9.74 (5.80)	7.55 (5.12)	–22.48	–2.19 (–0.98 to –3.39)	<.001	3.57 (316)	0.40
BRS[g]	3.17 (0.88)	3.29 (0.91)	+3.79	+0.12 (0.32 to 0.07)	.22	–1.24 (316)	–0.14

[a]PSS-10: Perceived Stress Scale-10.

[b]MBI-EE: Maslach Burnout Inventory-Emotional Exhaustion.

[c]MBI-DP: Maslach Burnout Inventory-Depersonalization.

[d]MBI-PA: Maslach Burnout Inventory-Personal Accomplishment.

[e]PHQ-9: Patient Health Questionnaire-9.

[f]GAD-7: Generalized Anxiety Disorder-7.

[g]BRS: Brief Resilience Scale.

Applying a Bonferroni corrected significant *P* value of ≤.01, Table S4 in Multimedia Appendix 4 indicates that participants in the IG and CG were similar with respect to all the demographic and work-related characteristics, except for teaching experience, where the proportion of teachers with 5 years or less teaching experience was double for the CG compared with the IG, and the proportion of teachers with more than 20 years of teaching experience was double for the IG compared to the CG.

Table 6 shows the results of an independent-sample *t* test assessing differences in mean scores between the IG and CG on scales for measuring the various psychological symptoms.

Applying a Bonferroni-corrected significance level of *P*≤.01, Table 6 indicates that the mean scores on the PSS-10, MBI-EE subscale, the PHQ-9, and the GAD-7 were significantly lower in the IG by 6.04%, 9.37%, 21.16%, and 22.48% compared to the CG.

The impact of the Wellness4Teachers program on subscribers was further assessed by using the chi-square test to compare the prevalence of psychological symptoms among the IG and CG participants during the same designated period, as shown in Table 7.

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Table 7. Differences in the prevalence of psychological symptoms among subscribers in the intervention group (IG) and control group (CG).

Psychological symptom	Prevalence, n (%)		Change from baseline (%)	Chi-square (*df*)	*P* value
	CG (baseline; n=152)	IG (6 months; n=166)			
High stress	26 (17.1)	17 (10.2)	–6.9	3.20 (1)	.07
High emotional exhaustion	120 (78.9)	115 (69.3)	–9.6	3.85 (1)	.05
High depersonalization	40 (26.3)	31 (18.7)	–7.6	2.67 (1)	.10
Low professional accomplishment	104 (68.4)	124 (74.7)	–6.3	1.54 (1)	.21
Likely major depressive disorder	90 (59.2)	64 (38.6)	–20.6	13.56 (1)	<.001
Sleep disturbance	116 (76.3)	131 (78.9)	2.6	0.31 (1)	.58
Suicidal ideation/thoughts of self-harm	26 (17.1)	18 (10.8)	–6.3	2.61 (1)	.11
Likely generalized anxiety disorder	79 (52.0)	51 (30.7)	–20.3	14.83 (1)	<.001
Low resilience	61 (40.1)	55 (34.9)	–5.2	1.58 (1)	.20

Applying a Bonferroni-corrected significant *P* value of ≤.01, Table 7 indicates that the prevalence of likely high depersonalization, MDD, and generalized anxiety disorder was significantly lower, by 7.6%, 20.6%, and 20.3%, respectively, for the IG compared to the CG. There was no statistically significant difference between the IG and the CG concerning other psychological symptoms.

To assess the impact of the Wellness4Teachers intervention on the reduced likelihood of psychological symptoms being present among subscribers while controlling for demographic and work-related variables, we entered the group type (IG vs CG) as a variable together with all demographic and work-related variables into nine separate logistic regression models. The key findings from the 9 models are summarized in Table 8.

Table 8. Odds of psychological symptoms among wellness4teachers subscribers in the control group compared to the intervention group after controlling for demographic and work-related variables.

Psychological variables of interest	Odds ratio (95% CI)	*P* value
High stress	0.42 (0.19-0.95)	.03
High emotional exhaustion	0.54 (0.29-1.03)	.06
High depersonalization	0.72 (0.36-1.43)	.35
Low professional accomplishment	0.70 (0.39-1.26)	.24
Likely major depressive disorder	0.47 (0.28-0.81)	.006
Sleep disturbance	0.72 (0.38-1.34)	.30
Suicidal ideation/thoughts of self-harm	0.50 (0.22-1.11)	.09
Likely generalized anxiety disorder	0.37 (0.21-0.64)	<.001
Low resilience	1.66 (0.95-2.90)	.74

Table 8 shows key results from separate logistic regression models, which assessed the independent contribution of the IG variable on the reduced presence of each of the 9 psychological symptoms in participants while controlling for sociodemographic variables.

The results in Table 8 demonstrate that the IG variable was a significant predictor (*P*≥.05) of high stress, likely MDD, and likely generalized anxiety disorder among the study participants when controlling for all demographic and work-related variables. However, the IG variable did not significantly predict the reduced presence of other psychological symptoms when controlling for demographic and work-related variables.

In terms of high stress, the model was not statistically significant (χ^2_{17}=18.53; n=237; *P*=.36), explaining only between 6.6% (Cox and Snell R^2) and 12.3% (Nagelkerke R^2) of the variance and correctly classified 87.1% (207/237) of all cases. However, controlling for all demographic and work-related variables, the "treatment group" contributed significantly to the model (Wald=4.38). The IG was 0.42 times less likely to present with high stress during the defined study period than CG (OR 0.42, 95% CI 0.19-0.95). This indicates that participants in the CG were 2.37 times more likely to meet the cutoff threshold for High Stress than participants in the IG, controlling for the demographic and work-related variables.

Concerning likely MDD, the model was not significant (χ^2_{17}=28.06; n=272; *P*=.04), explaining between 9.8% (Cox and Snell R^2) and 13.1% (Nagelkerke R^2) of the variance and correctly classifying 50.4% (137/272) of all cases. Controlling for all demographic and work-related variables, the "treatment group" contributed significantly to the model (Wald=7.64). The IG was 0.47 times less likely to present with likely MDD during the defined study period than CG (OR 0.47, 95% CI 0.28-0.81).

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This indicates that participants in the CG were 2.13 times more likely to meet the cutoff threshold for likely MDD than participants in the IG, controlling for the demographic and work-related variables.

For likely GAD, the regression model was statistically significant (χ^2_{17}=41.76; n=272; P<.001), explaining between 14.2% (Cox and Snell R^2) and 19.1% (Nagelkerke R^2) of the variance and correctly classified 66.2% (180/272) of all cases. Controlling for all demographic and work-related variables, the "treatment group" contributed significantly to the model (Wald=12.52). The IG was 0.37 times less likely to present with likely generalized anxiety disorder during the defined study period than CG (OR 0.37, 95% CI 0.21-0.64). This indicates that participants in the CG were 2.70 times more likely to meet the cutoff threshold for likely generalized anxiety disorder than participants in the IG, controlling for the demographic and work-related variables.

Discussion

Principal Findings

Supporting teachers' mental health and well-being is vital, not only because of the immense contribution they make to students' lives but also because of the indirect impact their poor psychological well-being has on students' well-being and academic achievements [5,50]. This study aimed to evaluate whether the Wellness4Teachers daily supportive text messaging program could reduce the prevalence and severity of psychological issues while enhancing resilience among teachers in Alberta, Newfoundland and Labrador, and Nova Scotia. To achieve this objective, we conducted both longitudinal and naturalistic controlled studies comparing psychological outcomes for subscribers of Wellness4Teachers. Although the naturalistic controlled design enhances ecological validity, it does not support definitive causal inference because there was no randomization. While regression analyses adjusted for measured confounders, residual confounding from unmeasured factors remains possible and may still influence the findings. Consequently, the findings should be interpreted as evidence of real-world association rather than causality.

The longitudinal findings suggest that participation in Wellness4Teachers may be associated with improvements in psychological well-being over time. Consistency across longitudinal and sensitivity analyses provides some support for the observed patterns, although fewer outcomes remained significant in complete-case analyses after correcting for multiple comparisons. These differences highlight the importance of considering missing data, attrition, and multiple testing when interpreting changes in psychological outcomes.

Most Wellness4Teachers subscribers signed up for the program at the beginning of the school year, with follow-up evaluations occurring in the middle of the school year. Without any intervention, the natural trajectory would be for symptoms of anxiety and depression to increase in the teachers as the school year progressed. In the randomized controlled study that evaluated predictors of anxiety and depressive symptoms among teachers, it was reported that anxiety and depressive symptoms increased for all teachers over the school year [51]. Thus, the significant reductions in symptoms of stress, anxiety, depression, disturbed sleep, and suicidal thoughts, as per the analysis using the last follow-up observation carried forward, provide indications of improvements in psychological symptoms observed among teachers participating in the Wellness4Teachers program.

The contemporaneous comparison suggests that participation in Wellness4Teachers was associated with more favorable psychological outcomes across several indicators. Adjusted analyses further support these associations, although the naturalistic, nonrandomized design limits causal interpretation. The absence of significant differences in other outcomes also suggests that potential benefits may vary across psychological domains, warranting further investigation in controlled studies. The outcome of severity measures in this study aligns with those of the Text4Hope youth program, where the mean scores on the PSS-10, PHQ-9, and GAD-7 were significantly lower for the IG compared to the CG by 8.6%, 25.7%, and 23.6%, respectively [27]. The results of the naturalistic controlled study also align with the results of greater symptom reduction for depression in the IG compared to the CG observed in the Text4Hope study and 2 randomized controlled trials in Ireland and Canada [27,45]. In addition, the prevalence outcomes in this study are partially consistent with longitudinal study findings from the Text4Hope [52] and Text4PTSI programs [28].

Beyond statistical significance, the observed reductions in PHQ-9, GAD-7, and PSS-10 scores may have meaningful practical implications, as improvements in depression, anxiety, and perceived stress are likely to enhance teachers' emotional well-being, concentration, work engagement, interpersonal relationships, and overall professional functioning. This may potentially contribute to improved classroom effectiveness and job satisfaction, ultimately benefiting students in terms of their overall academic performance.

The consistency of the positive impacts of supportive text messaging interventions across diverse programs, populations, and contexts highlights the potential for the Wellness4Teachers intervention as an approach for improving mental health and promoting psychological well-being among teachers in Canada and internationally. Furthermore, given the high prevalence of stress, anxiety, and depression among teachers globally and the generally busy schedule and widespread geographical distribution of teachers [5], interventions that are accessible, easy to sign up for, and have no geographical barriers are needed to address these psychological symptoms and promote well-being among teachers. For example, time constraints and geographic location may be factors restraining some teachers from accessing human-delivered and in-person mindfulness-based interventions with or without yoga or CBT [19]. The probable association between participants in the Wellness4Teachers program and psychological symptom reduction in this study inspires hope, as the program does not require significant time commitments from teachers and has no geographic location barriers in addressing symptoms of stress, anxiety, and depression. Therefore, it allows widespread adoption, contextualization, and implementation in high- and

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low-resource settings and in multiple jurisdictions to mitigate mental health symptoms among teachers. One study suggested that text-based therapy is 42.2% the cost of traditional services and offers much-reduced wait times [53]. The ResilienceNHope suite of programs, including the Wellness4Teachers program, may be a cost-effective intervention that can help close the psychological treatment and mental health literacy gaps among diverse populations worldwide [20]. The automation of the Wellness4Teachers program, coupled with computer-based delivery and limited human resource involvement, makes it a suitable population-level intervention that can be adopted by governments and education policy directors and managers to support tens of thousands of teachers simultaneously.

Notwithstanding the perceived positive impacts of the Wellness4Teachers program in mitigating symptoms of stress, anxiety, and depression among teachers, the results displayed for this study show that the intervention did not lead to statistically significant reductions in the severity or prevalence of the two burnout syndromes (depersonalization and personal accomplishment) or low resilience in subscribers in either the longitudinal study or the naturalistic study. This suggests that while Wellness4Teachers is a promising tool for addressing depression and anxiety symptoms among teachers, additional measures may be needed to address burnout syndromes and low resilience symptoms among teachers. However, mean scores for the CG and IG on the BRS were 3.17 and 3.29, respectively, which both fall within the score range for normal resilience. Practical measures such as reduced class sizes, enhanced support from school administration, reduced workload, support with the management of disruptive student behavior, and enhanced remuneration, which may address identified causes of increased burnout among teachers [5], need to be implemented alongside the Wellness4Teachers program.

Strengths and Limitations

The study has some limitations worth mentioning. First, the naturalistic study design used does not follow the conventional randomization of participants into the two study groups (IG and CG) at baseline. Nonetheless, the IG and CG participants were similar in all demographic and work-related characteristics, except for teaching experience. Furthermore, the logistic regression analysis used in our study controlled for any differences in sociodemographic and work-related characteristics while assessing the impact of the Wellness4Teachers program in reducing the prevalence of psychological symptoms in the naturalistic study. In addition, the comparison was deliberately structured so that outcomes for 6-week program completers were compared with those of new enrollees assessed at baseline during the same time period. Thus, both groups were situated within the same broader social, educational, and environmental context at the time of assessment. Consequently, time-varying influences such as seasonal effects, academic-calendar fluctuations, contemporaneous workplace pressures, policy changes, or other historical events would be expected to affect both groups concurrently rather than systematically favoring one group. The principal distinction between the groups was that one had received 6 weeks of the supportive text-messaging intervention, whereas the contemporaneous baseline group had not yet been exposed to the intervention.

Second, although outcome assessments for the intervention and control groups in the naturalistic study were obtained during the same calendar period, the groups were not observed over matched elapsed time intervals. The IG had received 6 months of supportive text messages before assessment, whereas the naturalistic CG was assessed at program entry before receiving the intervention. Contemporaneous assessment reduces potential academic-calendar time influences, and other environmental influences operating at the time outcomes were measured, but it does not control for maturation, regression to the mean, differential selection into the program over time, or other unmeasured factors associated with time since enrollment. Consequently, differences between the groups cannot be attributed solely to the intervention and should not be interpreted as causal treatment effects. The naturalistic comparison is therefore considered supportive and contextual to the primary prospective longitudinal findings rather than equivalent to a randomized or longitudinally matched controlled comparison.

Third, the relatively low follow-up survey completion rate and the LOCF approach used to analyze the longitudinal data assume stability of outcomes following the last available observation and may underestimate variability, particularly when participant outcomes continue to change after dropout. Accordingly, findings based on LOCF should be interpreted with appropriate caution, as this approach cannot eliminate potential bias arising from attrition or informative missingness. To address this issue, complete-case sensitivity analyses were conducted using paired-samples analyses at each follow-up time point. Although the findings were broadly consistent across approaches, this agreement does not establish robustness, as both methods may be biased by informative missingness. For example, selection bias may have occurred because data were collected through web-based questionnaires, potentially excluding teachers who lacked access to or were unable or unwilling to use smartphones or online platforms. Furthermore, the absence of statistically significant baseline differences between follow-up completers and noncompleters does not establish comparability or exclude attrition bias. Therefore, the findings should be interpreted cautiously. Fourth, the self-rated scales used to assess stress, anxiety, and depression symptomatology, although validated and standardized, are not diagnostic.

Notwithstanding these limitations, this study provides vital insights and evidence on the probable usefulness of the Wellness4Teachers program in supporting educators' mental well-being and alleviating their mental health burden.

Conclusions

The Wellness4Teachers program was associated with improvements in several psychological outcomes among teachers over 6 months. Findings from the longitudinal and exploratory naturalistic controlled analyses suggest that daily supportive text messaging may offer a promising approach to supporting teachers' psychological well-being. However, the observational, nonrandomized design limits causal inference, and residual confounding cannot be excluded. Further randomized or well-designed quasi-experimental studies are needed to confirm these associations and assess the program's effectiveness, feasibility, and cost-effectiveness. Future research

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should also examine implementation within educational systems and potential effects on student well-being and academic outcomes, which were not assessed in this study.

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Data Availability

Dataset supporting the conclusions of this study will be made available from the corresponding author upon reasonable request.

Generative AI Use

The authors declare that generative AI was not used in the preparation of this manuscript.

Authors' Contributions

Conceptualization: BA
Methodology: BA, VIOA
Formal analysis: BA, VIOA
Investigation: BA, YW, PB-M, VIOA
Data curation: BA, VIOA
Software: BA, YW, PB-M, VIOA
Resources: VIOA
Project administration: BA
Supervision: YW, PB-M
Funding acquisition: VIOA
Validation: BA, YW, PB-M, VIOA.
Writing–original draft: BA
Writing–review & editing: BA, YW, PB-M, VIOA

Conflicts of Interest

VIOA is the founder and principal investigator of the ResilienceNHope messaging suite of programs. VIOA and BA volunteer as board members of the Global Psychological eHealth Foundation, a not-for-profit organization that oversees the ResilienceNHope suite of programs. BA volunteers as the president and chief executive officer of the Global Psychological eHealth Foundation. VIOA and BA receive no financial or other compensation from the Global Psychological eHealth Foundation and have no financial conflicts of interest regarding this article. PB-M and YW declare no conflicts of interest.

Multimedia Appendix 1

Baseline demographic and psychological characteristics of participants who completed the baseline and at least one follow-up survey and the participants who completed only the baseline survey.
[DOCX File , 20 KB-Multimedia Appendix 1]

Multimedia Appendix 2

Comparison of baseline psychological scale score.
[DOCX File , 26 KB-Multimedia Appendix 2]

Multimedia Appendix 3

Sociodemographic and professional characteristics follow-up.
[DOCX File , 55 KB-Multimedia Appendix 3]

Multimedia Appendix 4

Distribution of demographic and work-related characteristics in the control group and intervention group.

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[DOCX File , 17 KB-Multimedia Appendix 4]

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Abbreviations

BRS: Brief Resilience Scale
CBT: cognitive behavioral therapy
CG: control group
GAD-7: Generalized Anxiety Disorder-7
IG: intervention group
LOCF: last-observation-carried-forward
MBI-DP: Maslach Burnout Inventory-Depersonalization
MBI-EE: Maslach Burnout Inventory-Emotional Exhaustion
MBI-ES: Maslach Burnout Inventory-Educator Survey
MBI-PA: Maslach Burnout Inventory-Personal Accomplishment
MDD: major depressive disorder
OR: odds ratio
PHQ-9: Patient Health Questionnaire-9
PSS-10: Perceived Stress Scale-10

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