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ORIGINAL ARTICLE

Transcendental Meditation for Women Affected by Domestic Violence: A Pilot Randomised, Controlled Trial

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Abstract

Purpose Domestic and family violence is a major public health issue impacting one in three women worldwide. The implications of such violence are considerable. Transcendental Meditation® (TM) represents a promising treatment option for women impacted by domestic violence given its demonstrable effects on mental and trauma-related symptoms. This study set out to compare the effectiveness of TM to group support, on quality of life, perceived stress and mood in female survivors of domestic violence.

Methods This 16-week pilot randomised controlled trial recruited women from metropolitan Adelaide, who survived any type of domestic violence in their lifetime. Outcomes included health-related quality of life, severity of depression, anxiety and perceived stress, symptoms of post-traumatic stress disorder, and subjective experience. Data were analysed by intention-to-treat using linear mixed-effects models.

Results Forty-two women were randomly assigned to the TM (n = 21) and support (n = 21) groups. Adjusting for random effects, TM was shown to be significantly more effective than support at improving Australian Quality of Life (AQoL-8D) utility scores (p = .011), and Depression Anxiety and Stress Scale (DASS-21) severity scores for depression (p = .029), anxiety (p = .017) and stress (p = .021) over the 16 weeks. There was no statistically significant time-group interaction effect for PTSD Checklist for DSM-5 (PCL-5) total symptom severity scores.

Conclusions TM is shown to have promising effects on quality of life, perceived stress and mood among women exposed to domestic violence, suggesting that it may represent an effective alternative to group support.

Trial Registration ACTRN12620000467932 (09/04/2020).

Keywords Anxiety · Depression · Domestic violence · Family violence · Meditation · Quality of life

Introduction

Domestic violence (also referred to as family violence or intimate partner violence) represents any physical, psychological, sexual, economic or emotional action, or threat of action, that aims to maintain control and power over an intimate partner (United Nations, 2023). These acts can be targeted at any family member, though the majority of cases are against women. Globally, 26% of (or 753 million) women aged 15 years or older have experienced domestic violence at least once in their lifetime (World Health Organization, 2021). Accordingly, domestic violence represents a significant public health issue.

Acts of domestic violence can have serious, long-lasting effects on the survivor, their family, and the community. In terms of physical impacts, domestic violence can lead to serious injury, sexually transmitted infections, adverse pregnancy outcomes, sleep problems, hypertension and death (Hawcroft et al., 2019; Walker-Descartes et al., 2021; Walsh et al., 2015). Psychosocial implications can include substance misuse, depression, anxiety, post-traumatic stress disorder, homelessness, and suicidality (Hawcroft et al., 2019; Walker-Descartes et al., 2021; Walsh et al., 2015). There are also considerable economic implications

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of domestic violence, with domestic violence costing survivors and the community AU$22 billion in Australia (in 2015-16; KPMG, 2016), UK£66 billion in the UK (in 2017; Oliver et al., 2019), and US$3.6 trillion in the USA (in 2014; Peterson et al., 2018).

Access to appropriate, affordable, timely, safe and effective interventions is critical to mitigating the long-term costs and implications of domestic violence for survivors and the community. Current best practice guidelines recommend a range of interventions to support a survivor's recovery from domestic violence, from low-intensity psychological interventions (such as progressive muscle relaxation, and deep breathing), to high-intensity psychological interventions (such as counselling, cognitive behavioural therapy, and group work) (American Psychiatric Association, 2019; Benavides et al., 2019; Domestic Violence NSW, 2022). While these interventions are shown to be relatively effective in improving wellbeing in survivors of domestic violence, these interventions may not be accessible, affordable or acceptable to survivors in some contexts (Lakin et al., 2022; National Institute for Health & Care Excellence, 2016).

There are a number of promising interventions not currently included in clinical guidelines that could potentially benefit survivors of domestic violence. One such intervention considered to be well-accepted, well-tolerated, safe, simple to learn, and relatively effortless and convenient to practice, is Transcendental Meditation® (TM) (Azizoddin et al., 2021; Eppley et al., 1989). TM is a standardized mantra-based form of meditation that enables a person to drift into a psychophysiological state of restful alertness (Eppley et al., 1989). Current evidence indicates TM is effective in improving many of the symptoms/conditions observed in survivors of domestic violence, including anxiety, depression, perceived stress, post-traumatic stress disorder, mental wellbeing, physical wellbeing, hypertension, sleep disturbance and substance misuse (Bai et al., 2015; Bellehsen et al., 2022; Elder et al., 2014; Orme-Johnson et al., 2014; Goldstein et al., 2018; Gryczynski et al., 2018; Joshi et al., 2022).

While TM may appear to be a promising treatment option for survivors of domestic violence, few studies have examined the effectiveness of TM in this population. The study reported herein represents the first known randomized controlled trial to examine the effectiveness of TM in improving quality of life, anxiety, depression, perceived stress and post-traumatic stress disorder in women exposed to domestic violence.

Methods

Design The study was a pilot randomised controlled trial with two parallel arms. The study was designed and reported in accordance with the Consolidated Standards of Reporting Trials (CONSORT) Statement: extension to randomised pilot and feasibility trials (Eldridge et al., 2016). A detailed description of the study protocol is reported elsewhere (Leach et al., 2020).

Hypotheses The study was designed to test the following hypotheses:

Primary hypothesis

1. The Transcendental Meditation technique significantly improves quality of life in women exposed to domestic violence, at 8 weeks and 16 weeks post-training, compared to group support.

Secondary hypotheses

1. The Transcendental Meditation technique significantly reduces severity of perceived stress in women exposed to domestic violence, at 8 weeks and 16 weeks post-training, compared to group support.
2. The Transcendental Meditation technique significantly reduces severity of anxiety in women exposed to domestic violence, at 8 weeks and 16 weeks post-training, compared to group support.
3. The Transcendental Meditation technique significantly reduces severity of depression in women exposed to domestic violence, at 8 weeks and 16 weeks post-training, compared to group support.
4. The Transcendental Meditation technique significantly reduces the severity of post-traumatic stress disorder (PTSD) symptoms in women exposed to domestic violence, at 8 weeks and 16 weeks post-training, compared to group support.

Setting The project was administered by the University of South Australia, and implemented through the Hackham West Children's Centre (Hackham), and Forbes Children's Centre for Early Childhood Development and Parenting (South Plympton), South Australia.

Sample Women were eligible to participate in the trial if they were aged ≥ 18 years, resided in metropolitan Adelaide (South Australia), had experienced domestic violence in their lifetime, were able to speak, read and understand English, were able to commit to the intervention/control schedule, and were capable of providing informed consent.

Women were excluded if they were in an active violent domestic relationship, had a serious psychiatric condition, were taking psychoactive substances at the time of enrolment, or had previously completed training in the Transcendental Meditation technique. The study aimed to recruit a total of 88 participants (44 in each arm). Details of the sample size calculation are reported in the study protocol (Leach et al., 2020).

Outcomes The primary outcome of the study was health-related quality of life, which was measured using the 35-item Australian Quality of Life – 8 dimension (AQoL-8D) instrument (Richardson et al., 2014). The AQoL-8D is shown to have high face validity, medium convergent validity with the Health Utility Index 3 and EuroQol 5 Dimension instruments, excellent test–retest reliability, and good internal consistency (Richardson et al., 2014).

Secondary outcomes included severity of perceived stress, severity of anxiety and severity of depression – which were measured using the 21-item Depression Anxiety Stress Scale [DASS-21]) (Ng et al., 2007). The DASS-21 is shown to have strong convergent validity with the Mental Health Questionnaire, Self-Rating Depression Scale (for the depression domain of the DASS-21) and State-Trait Anxiety Inventory-Y2 (for the anxiety domain of the DASS-21), and good internal consistency (Coker et al., 2018; Ng et al., 2007). Severity of post-traumatic stress disorder (PTSD) symptoms was assessed using the 20-item PTSD Checklist for DSM-5 [PCL-5]), which has demonstrated strong convergent validity with the Posttraumatic Distress Scale and Detailed Assessment of Posttraumatic Symptoms–Posttraumatic Stress Scale, excellent test–retest reliability and good internal consistency (Blevins et al., 2015). Subjective experience was assessed through open-ended questions in the data collection form and trial exit form. All outcome measures were administered by participants at weeks 0, 8 and 16, except for subjective experience, which was reported by participants at weeks 8 and 16 only.

Recruitment Participants were recruited between July 2020 and November 2021. A range of media were used to promote the study, including study flyers (which were posted in local community centres across the southern suburbs of Adelaide), a Facebook page, social media posts (i.e. Twitter, Facebook, LinkedIn), newspaper advertisements, radio interviews, community centre newsletters, and outreach to other community groups and professionals delivering domestic violence services. A modest honorarium (i.e. AU$30 voucher) was offered to participants to facilitate recruitment.

Randomisation Participants were block randomised using computer-generated randomly permuted blocks of four, with randomisation codes held in sequentially numbered opaque sealed envelopes. Randomisation was completed by a third party not directly involved in the administration of the trial. Sealed envelopes were selected in consecutive order at the time of enrolment by a member of the research team who was unaware of the allocation sequence.

Interventions Participants were randomly assigned to one of two groups. The intervention group received 12 h of standardized training in the Transcendental Meditation (TM) technique, which consisted of 9×1–2 h individual and group-based sessions delivered over 8 weeks, and a 1.5-hour follow-up session at week 16. The sessions covered the health implications of stress, the theory of TM, instruction on the TM technique, and assessment, refinement and mastery of the technique. These sessions were facilitated by qualified TM instructors. Participants assigned to the TM group were also required to practice TM at home for 20 min twice a day.

The control group received 12 h of facilitated group support, comprising 8×1.5-hour weekly group sessions delivered over 8 weeks, plus a 1.5-hour follow-up session at week 16. Facilitated by an experienced social worker, the group sessions encouraged the sharing of personal experiences, explored victim, survivor and perpetrator behaviours, and discussed challenges and strategies to improving wellbeing. Further details of the intervention and control are reported elsewhere (Leach et al., 2020).

Blinding Blinding of participants was not possible due to the nature of the intervention. However, the data analyst was blinded to group assignment until all analyses were undertaken.

Statistical Analysis Data were entered into SPSS (v.25) and analysed by intention-to-treat. Missing data were managed using the multiple imputation method. Categorical data were described using frequency distributions and percentages. Descriptive data were analysed using means and standard deviations if data were normally distributed, and medians and interquartile ranges if data were not normally distributed. Differences between groups at baseline were analysed using Fisher's Exact tests (for categorical variables), independent samples median tests (for medians) or independent samples t-tests (for means). Linear mixed-effects models were used to test for intervention effects (Estimation type:

restricted maximum likelihood; Fixed effects: group, time, group by time interaction; Random effect: participant ID).

Ethics The study was approved by the the University of South Australia Human Research Ethics Committee (ID: 202647).

Results

Sixty-one women were screened for eligibility, of which 19 were excluded as they were either unable to commit to the intervention/control schedule (n = 16) or had reported a serious psychiatric condition (n = 3) (Fig. 1). The remaining 42 women were randomly assigned to the intervention (n = 21) and control (n = 21) groups. Data from all randomised participants were analysed.

Characteristics of Participants Participants were aged 47.8 ± 12.3 years (mean and SD), and all identified as female (Table 1). Most participants were unemployed/retired (57.1%), non-smokers (81.0%), non-drinkers (69.0%), single/separated/divorced (64.3%), had 1 (median; IQR 0,2) dependent child, rated their overall health status as fair to good (69.0%), and had experienced domestic violence more than 12 months ago (64.3%). Median baseline DASS21 depression severity score (33, IQR 22,46), DASS21 anxiety severity score (38, IQR 20,46), and DASS21 stress severity score (26, IQR 16,41) were high. Median baseline AQoL-8D utility score (0.5, IQR 0.3,0.6) and PCL5 total symptom severity score (32, IQR 21,43) were moderate. Apart from the DASS21 Stress severity score, there were no statistically significant differences in demographic variables or outcomes between groups at baseline.

Health-related Quality of life Significant improvements in AQoL-8D utility score, AQoL-8D superdomain scores and AQoL-8D domain scores (excluding pain and senses

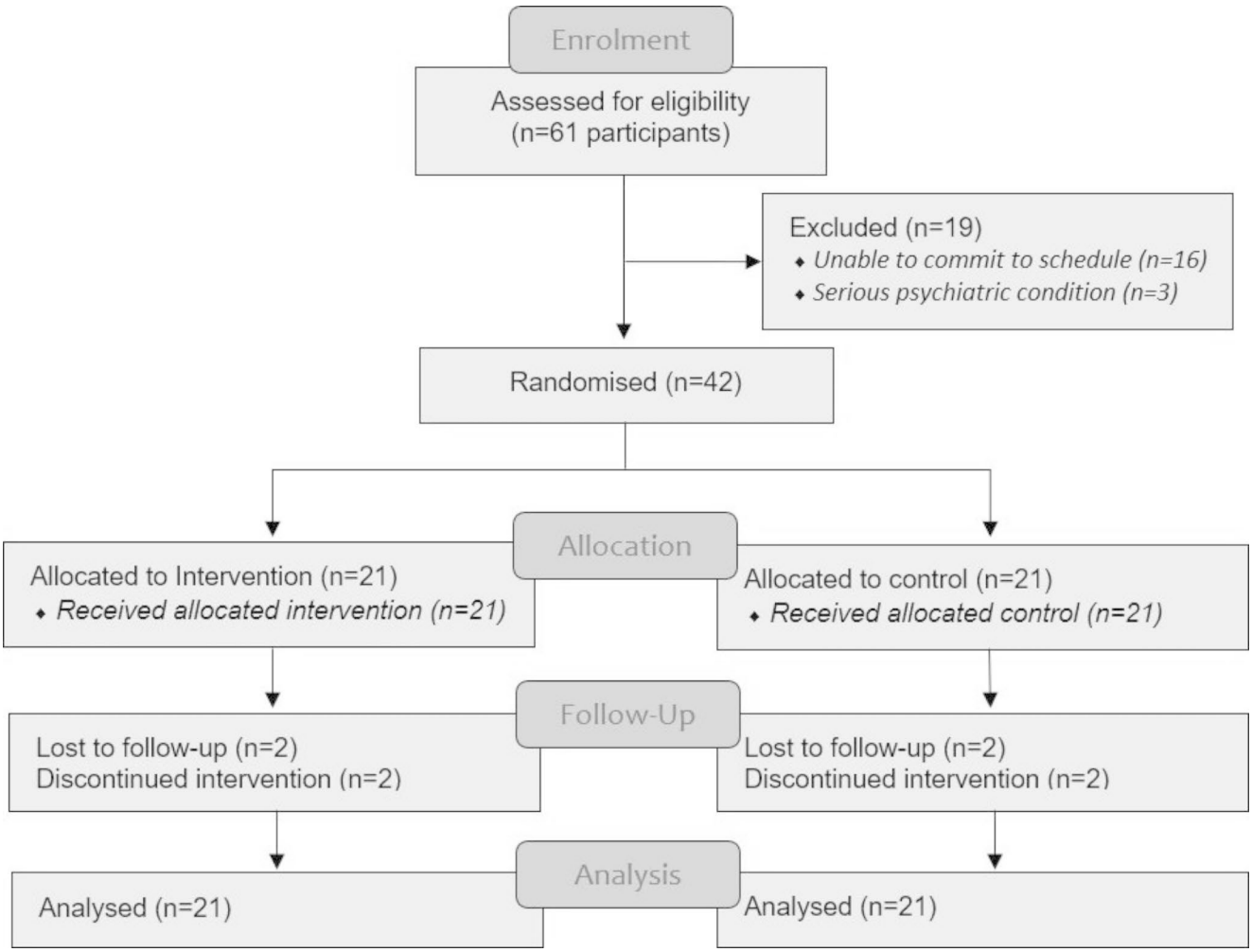

Fig. 1 Participant flow chart

Table 1 Characteristics of participants at baseline (n = 42)

Characteristic	Intervention group (n = 21)	Control group (n = 21)	P value*
Age, *mean (SD)*	48.2 ± 12.5	47.4 ± 12.4	0.834
Highest level of education, *n (%)*			0.575
Primary school	0 (0.0)	1 (4.8)	
Secondary school	5 (23.8)	8 (38.1)	
Diploma/Advanced Diploma	5 (23.8)	6 (28.6)	
Bachelor degree	5 (23.8)	2 (9.5)	
Post-graduate qualification	6 (28.6)	4 (19.0)	
Employment status, *n (%)*			0.385
Unemployed	7 (33.3)	11 (52.4)	
Retired	4 (19.0)	2 (9.5)	
Employed	8 (38.1)	8 (38.1)	
Leave of absence	2 (9.5)	0 (0.0)	
Non-smoker (tobacco), *n (%)*	18 (85.7)	16 (76.2)	0.697
Non-drinker (alcohol), *n (%)*	14 (66.7)	15 (71.4)	1.000
Relationship status, *n (%)*			0.602
Single (never married)	3 (14.3)	6 (28.6)	
Defacto relationship	5 (23.8)	2 (9.5)	
Separated/divorced	8 (38.1)	10 (47.6)	
Widowed	2 (9.5)	1 (4.8)	
Married	3 (14.3)	2 (9.5)	
Number of dependent children, *median (IQR)*	1 (0,2)	2 (0,3)	0.350
Overall health status, *n (%)*			0.938
Poor	4 (19.0)	2 (9.5)	
Fair	6 (28.6)	7 (33.3)	
Good	8 (38.1)	8 (38.1)	
Very good	3 (14.3)	3 (14.3)	
Excellent	0 (0.0)	1 (4.8)	
Recency of domestic violence experience, *n (%)*			1.000
Within the last 12 months	7 (33.3)	8 (38.1)	
More than 12 months ago	14 (66.7)	13 (61.9)	
Baseline DASS21 Depression severity score, *median (IQR)*	34 (23,46)	30 (22,43)	1.000
Baseline DASS21 Anxiety severity score, *median (IQR)*	40 (18,47)	28 (22,41)	0.122
Baseline DASS21 Stress severity score, *median (IQR)*	34 (16,42)	22 (17,37)	**0.031**
Baseline AQoL-8D utility score, *median (IQR)*	0.4 (0.3,0.6)	0.5 (0.4,0.6)	0.217
Baseline PCL5 Total symptom severity score, *median (IQR)*	36 (17,46)	29 (22,37)	0.217

*means compared using independent samples t-test; medians compared using independent samples median test; categorical data compared using Fisher's Exact test

AQoL-8D – Australian Quality of Life (8-dimension); DASS21 – Depression Anxiety Stress Scale; PCL5 - PTSD Checklist for DSM-5

domain scores) were evident across all participants over time, based on the linear mixed model (Table 2). There were statistically significant time-group interaction effects across all AQoL-8D scores (excluding happiness and self-worth domain scores). Accounting for random (subject) effects, participants in the intervention group demonstrated a significant increase in AQoL-8D utility scores (time-group interaction, 0.14; 95% CI 0.03 to 0.25; p = .011), AQoL-8D mental superdomain scores (time-group interaction, 0.10; 95% CI 0.01 to 0.20; p = .033), AQoL-8D physical superdomain scores (time-group interaction, 0.14; 95% CI 0.03 to 0.25; p = .015), AQoL-8D coping domain scores (time-group interaction, 0.14; 95% CI 0.05 to 0.24; p = .004) and AQoL-8D pain domain scores (time-group interaction, 0.15; 95% CI 0.02 to 0.27; p = .021), over the 16 weeks when compared with control. There was negligible variation in these estimates after controlling for the effect of class attendance.

Severity of Depression, Anxiety and Perceived Stress The linear mixed model showed significant reductions (p < .001) in DASS-21 depression, anxiety and stress severity scores in all participants over time (Table 3). Statistically significant time-group interaction effects were also evident for DASS-21 anxiety and stress severity scores, though this was only marginally significant for DASS-21 depression severity score. After adjusting for random effects, participants in the intervention group showed a significant decrease in DASS-21 depression severity scores (time-group interaction, -10.50; 95% CI -19.88 to -1.11; p = .029), DASS-21 anxiety severity scores (time-group interaction, -14.32; 95% CI -25.92 to -2.71; p = .017) and DASS-21 stress severity scores (time-group interaction, -12.70; 95% CI -23.43 to -1.98; p = .021) over the 16 weeks when compared with control. Controlling for the effect of class attendance had negligible impact on these estimates.

Severity of PTSD Symptoms A significant reduction in PCL-5 Total Symptom Severity Score was evident in all participants over time, according to the linear mixed model (Table 3). The model also showed a statistically significant time-group interaction effect for PCL-5 Total Symptom Severity Score. This time-group interaction effect was no longer statistically significant when adjusted for random effects. There was negligible variation in these estimates after controlling for the effect of class attendance.

Adverse Events Twelve adverse events were reported by 6 participants in the intervention group. These events were transient, and mostly mild (i.e. nausea, headache, irritability, weight gain). Two participants self-reported a severe adverse event that they believed was related to the intervention (i.e. cold-sore, body feeling heavy). Five adverse events were reported by 5 participants in the control group. These events were of mild-moderate severity and transient in nature, and included shaking, overwhelm, feeling upset and heart palpitations. The frequency of adverse events was

Table 2 Australian Quality of Life – 8 Dimension (AQoL-8D) scores over time, by group

Measurement	Intervention group (n = 21)	Control group (n = 21)	P value*	Mixed model analysis with interactions	
				Fixed effect	P value[#]
AQoL-8D Utility Score, *mean (SD)*					
Week 0	0.45 (0.19)	0.51 (0.18)	0.277	Time	< 0.001
Week 8	0.66 (0.18)	0.52 (0.17)	0.027	Group	0.281
Week 16	0.64 (0.20)	0.56 (0.16)	0.178	Time*Group	**0.002**
AQol 8D independent living domain, *mean (SD)*					
Week 0	0.76 (0.16)	0.77 (0.16)	0.799	Time	0.007
Week 8	0.87 (0.13)	0.78 (0.18)	0.094	Group	0.255
Week 16	0.87 (0.15)	0.79 (0.17)	0.142	Time*Group	**0.025**
AQoL-8D happiness domain, *mean (SD)*					
Week 0	0.62 (0.18)	0.70 (0.15)	0.136	Time	0.005
Week 8	0.76 (0.12)	0.73 (0.12)	0.337	Group	0.826
Week 16	0.75 (0.15)	0.72 (0.13)	0.611	Time*Group	0.059
AQoL-8D mental health domain, *mean (SD)*					
Week 0	0.48 (0.13)	0.49 (0.10)	0.709	Time	< 0.001
Week 8	0.59 (0.14)	0.50 (0.12)	0.032	Group	0.217
Week 16	0.59 (0.15)	0.54 (0.13)	0.265	Time*Group	**0.011**
AQoL-8D coping domain, *mean (SD)*					
Week 0	0.61 (0.18)	0.68 (0.15)	0.194	Time	< 0.001
Week 8	0.80 (0.13)	0.71 (0.12)	0.048	Group	0.377
Week 16	0.75 (0.16)	0.68 (0.12)	0.120	Time*Group	**0.002**
AQoL-8D relationships domain, *mean (SD)*					
Week 0	0.57 (0.11)	0.58 (0.13)	0.770	Time	0.036
Week 8	0.68 (0.14)	0.58 (0.11)	0.024	Group	0.229
Week 16	0.63 (0.12)	0.61 (0.14)	0.593	Time*Group	**0.001**
AQoL-8D self-worth domain, *mean (SD)*					
Week 0	0.63 (0.18)	0.65 (0.16)	0.732	Time	0.003
Week 8	0.77 (0.14)	0.68 (0.16)	0.065	Group	0.231
Week 16	0.76 (0.20)	0.71 (0.13)	0.308	Time*Group	0.062
AQoL-8D pain domain, *mean (SD)*					
Week 0	0.54 (0.15)	0.64 (0.23)	0.104	Time	0.240
Week 8	0.65 (0.20)	0.60 (0.27)	0.523	Group	0.991
Week 16	0.67 (0.18)	0.62 (0.31)	0.560	Time*Group	**0.014**
AQoL-8D senses domain, *mean (SD)*					
Week 0	0.74 (0.17)	0.81 (0.11)	0.102	Time	0.346
Week 8	0.84 (0.12)	0.77 (0.18)	0.135	Group	0.801
Week 16	0.81 (0.15)	0.83 (0.11)	0.677	Time*Group	**0.031**
AQoL-8D mental superdomain, *mean (SD)*					
Week 0	0.20 (0.14)	0.23 (0.15)	0.546	Time	0.003
Week 8	0.36 (0.18)	0.24 (0.10)	0.013	Group	0.131
Week 16	0.34 (0.17)	0.26 (0.12)	0.137	Time*Group	**0.002**
AQoL-8D physical superdomain, *mean (SD)*					
Week 0	0.47 (0.14)	0.56 (0.19)	0.080	Time	0.019
Week 8	0.61 (0.18)	0.53 (0.23)	0.230	Group	0.802
Week 16	0.63 (0.18)	0.57 (0.25)	0.468	Time*Group	**0.003**

*means compared using independent samples t test

[#]p values associated with type III tests of fixed effects

SD – Standard deviation

not shown to be statistically significantly different between groups.

Subjective Experience Participants' experiences of the intervention and control were overwhelmingly positive. Participants in the intervention group were "grateful for the experience", indicating that TM was "easy to learn", the instructors were warm and accepting, the classes were enjoyable, and TM "provided a lot of benefits", including perceived improvements in mental clarity, eyesight, sleep, stress and coping. Two participants indicated that finding the time to practice TM twice a day was challenging, and for one participant, arranging travel for the classes was difficult.

Participants assigned to the control group found the support group "empowering", and the information and techniques

Table 3 Depression Anxiety Stress Scale (DASS-21) and PTSD Checklist for DSM-5 (PCL-5) scores over time, by group

Measurement	Intervention group (n = 21)	Control group (n = 21)	P value*	Mixed model analysis with interactions	
				Fixed effect	P value#
DASS-21 Depression Severity Score, *mean (SD)*					
Week 0	35.5 (17.0)	32.6 (13.3)	0.534	Time	< 0.001
Week 8	20.0 (13.8)	26.8 (11.4)	0.117	Group	0.320
Week 16	21.2 (16.5)	28.2 (14.0)	0.164	Time*Group	0.052
DASS-21 Anxiety Severity Score, *mean (SD)*					
Week 0	39.5 (18.6)	31.2 (12.3)	0.096	Time	< 0.001
Week 8	19.2 (12.5)	25.9 (15.1)	0.154	Group	0.715
Week 16	22.2 (14.4)	28.5 (16.2)	0.212	Time*Group	**0.025**
DASS-21 Stress Severity Score, *mean (SD)*					
Week 0	31.6 (16.6)	24.8 (12.3)	0.137	Time	< 0.001
Week 8	14.3 (9.6)	21.2 (10.9)	0.053	Group	0.568
Week 16	16.6 (15.4)	22.4 (13.1)	0.221	Time*Group	**0.011**
PCL-5 Total Symptom Severity Score, *mean (SD)*					
Week 0	32.7 (16.6)	29.9 (12.7)	0.534	Time	< 0.001
Week 8	18.8 (13.2)	27.7 (11.7)	0.042	Group	0.501
Week 16	19.3 (14.3)	22.6 (13.2)	0.470	Time*Group	**0.027**

*means compared using independent samples t test

#p values associated with type III tests of fixed effects

SD – Standard deviation

Participant flow chart

helpful. Participants indicated that they enjoyed sharing experiences, building connections, realising that they were not alone, and gaining new insights into their own behaviours. Many found the group beneficial, leading to perceived improvements in stress, wellbeing, confidence, self-esteem and anxiety. For one participant though, the ability to attend all sessions was challenging.

Participant Adherence The median rate of class attendance for participants in each group was 90.9% (IQR 81.8%, 100.0%) in the intervention group and 88.9% (IQR 77.8%, 88.9%) for the control group. The difference between groups in median class attendance rate was statistically significant (Yates $\chi^2 = 13.84$, $p < .001$). The median rate of adherence to the at-home practice schedule for the intervention group (i.e. twice daily TM) was 53.2% (IQR 47.8%, 89.0%) for weeks 1–8, and 81.6% (IQR 62.7%, 90.3%) for weeks 9–16.

Discussion

This clinical trial set out to compare the effectiveness of TM to group support in female survivors of domestic violence. The findings revealed that TM was significantly more effective than group support in improving health-related quality of life, anxiety, depression and perceived stress, but not PTSD symptoms at 16 weeks. Participants also reported a generally positive experience of TM and group support. These findings suggest that TM may be a plausible alternative to group support for survivors of domestic violence, particularly when survivors are hesitant or unable to partake in group-based therapies. TM also may be a valuable addition to group support programs when such programs are considered feasible or suitable to survivors.

Exposure to domestic violence is consistently shown to be associated with poorer quality of life (Alsaker et al., 2018; Hisasue et al., 2020; Tavoli et al., 2016). Our study supports these observations, with participant AQoL-8D utility scores at baseline (i.e. median 0.5) shown to be considerably lower than matched population norms (i.e. mean 0.76 for Australian women aged 45–54 years) (Maxwell et al., 2016). Relative to group support, TM was able to improve AQoL-8D utility scores on average, by 42% in 16 weeks, thereby moving QoL scores closer to population norms. This finding corroborates that of other trials, which similarly report significant improvements in quality of life following exposure to TM (Chhatre et al., 2013; Goldstein et al., 2018; Nidich et al., 2009).

The significant improvement in quality of life represents a notable point of difference between TM and other therapies. In a recent Cochrane review, the authors concluded that there is no evidence of a difference in quality of life among female survivors of intimate partner violence receiving psychological therapies versus usual care or no treatment (Hameed et al., 2020). Given that improvements in quality of life are often associated with reductions in healthcare utilisation and expenditure (Kurpas et al., 2015; Vaughn et al., 2022), it could be argued that TM might play a part in reducing the economic burden of managing survivor recovery from domestic violence. This proposition represents an important focus for future research.

The statistically significant improvements in depression, anxiety and stress scores observed in the TM group over time are consistent with the findings of other studies of TM (Elder et al., 2011, 2014; Goldstein et al., 2018; Joshi et al., 2022).

Further, these improvements were clinically significant, with TM shifting mean depression scores from extremely severe to severe, while scores in the support group remained within the extremely severe range. Similarly, stress scores in the TM group shifted from severe to mild during the trial, whereas scores in the support group remained within the moderate range (Lovibond & Lovibond, 1995). While anxiety scores in the TM group did fall considerably during the trial, they only shifted from the upper limit of the extremely severe range to the lower limit. The findings of this study not only confirm the high levels of depression, anxiety and stress in survivors of domestic violence (Fadardi & Ziaee, 2009; Lester et al., 2021; Malik et al., 2021), but indicate that clinically and statistically significant improvements in these outcomes can be gained through exposure to TM.

Although there was a statistically significant reduction in PTSD scores between groups over time, the difference was not statistically significant when adjusted for random effects. Nonetheless, the improvement in mean PCL-5 scores observed in the TM group (who had a mean PCL-5 score indicative of PTSD [i.e. 31–33]) represented a clinically significant (10–20 point) change, whereas group support only had a reliable (5–10 point) change (Weathers et al., 2013). Given that other studies have reported significant reductions in PTSD scores across a range of populations exposed to TM (Starke & Stein, 2017), and adherence to and effectiveness of other psychological therapies for PTSD are sub-optimal, there is merit in further exploring the effectiveness of TM for PTSD in survivors of domestic violence.

Our findings indicate that TM is a relatively well-tolerated and feasible intervention for survivors of domestic violence, with participants reporting few adverse events, most of which were mild and transient in nature. While worsening of symptoms and/or the manifestation of psychosomatic adverse effects are not uncommon with psychological and meditative therapies (Muschalla et al., 2020; Schermuly-Haupt et al., 2018; Taylor et al., 2022), reporting of adverse events to psychological therapies (including TM) is largely inadequate (Condon et al., 2021; Hayes & Za'ba, 2022). The few clinical studies that have purposefully measured adverse events to TM (Leach et al., 2015) have similarly reported psychosomatic adverse events to TM, though the intensity and frequency of events reported in our study was relatively lower. This finding confirms that psychological and meditative therapies are not free of adverse events, and that future studies of TM need to be more diligent and systematic in the reporting of such events.

Although this study was novel, and had utilised a robust study design and validated outcome measures, it did have some limitations. First, the study was unable to achieve the target sample size of 88 participants. This was despite the implementation of an extensive multi-modal recruitment campaign and extension of the recruitment period from nine months to sixteen months. While this could point to a possible type 1 error, post-hoc power analysis (Cohen's $d = 0.442$, $p = .05$, sample size = 42) revealed the study was adequately powered (power = 82%). Second, as it was not possible to blind participants to group assignment (due to the overt nature of each intervention), this could have potentially introduced expectation bias. Given that both study arms used active interventions, and participants in each study arm reported a positive experience with their assigned intervention, the likelihood of expectation bias in this trial is expected to be minimal. Third, as participants were limited to women residing in the Southern suburbs of Adelaide, it is unclear whether the findings would be translatable to men, or others living in non-metropolitan regions. These populations should be a focus of future research.

Conclusions

This study has shown for the first time, that TM may offer a clinically significant benefit to female survivors of domestic violence in terms of quality of life, perceived stress, depression and anxiety when compared with group support. Further, TM appears to be a feasible, well-received and well-tolerated therapy for this population. An important next step of this research will be to establish the clinical and economic effectiveness of TM in both male and female survivors of domestic violence through larger, more definitive randomised controlled trials.

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Declarations

Conflict of interest HL works for GMDO Australia (trading as TM for Women), a not-for-profit educational charity that delivers TM training. The other authors declare no conflict of interest.

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