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Associations of a 30-Day Cyclic Meditation ProgrammeWith Stress, Anxiety, Depression and Sleep Quality in Caregivers of Children With Developmental Disabilities: A Quasi-Experimental Study

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Abstract

Background: Caregivers of children with developmental disabilities experience high levels of stress, anxiety, depression and disturbed sleep. Mind–body practices that cultivate conscious awareness, such as Cyclic Meditation (CM), may offer a low-cost adjunct to support caregiver well-being.

Aim: To examine the association between participation in a 30-day CM programme and changes in psychological distress and sleep quality among caregivers.

Methods: In a non-randomised, quasi-experimental design, 74 caregivers (47 CM; 27 control) completed pre- and post-assessments. Depression, anxiety and stress were measured with the Depression Anxiety Stress Scales (DASS-21), and sleep quality with the Pittsburgh Sleep Quality Index (PSQI). Between-group differences at post-test were analysed using analysis of covariance adjusting for baseline scores; effect sizes and 95 % confidence intervals were calculated.

Results: After 30 days, CM participants showed large within-group reductions in depression, anxiety and stress and improved sleep quality. Adjusted between-group analyses indicated significantly lower post-test scores for CM participants compared with controls (partial η^2 = 0.43–0.62 across outcomes). The control group showed minimal change on DASS-21 measures and only modest improvement in PSQI.

Conclusions: Participation in a brief, structured CM programme was associated with markedly lower self-reported psychological distress and better sleep quality in caregivers. Because allocation was non-randomised, no active comparator was included and outcomes were measured only immediately post-intervention, these findings represent associations rather than proof of causality. Randomised controlled trials with extended follow-up and objective measures are warranted to confirm and extend these preliminary results.

Keywords: Cyclic Meditation; Conscious awareness; Caregivers; Stress; Anxiety; Depression; Sleep quality

Introduction

Caring for children with developmental disabilities places substantial and ongoing psychological and physical demands on caregivers. Compared with parents of typically developing children, these caregivers frequently report higher levels of stress, anxiety, depression and disrupted sleep (Feizi et al., 2014; Hayes & Watson,

2013; Singh & Ali, 2023; Raina et al., 2004). Poor sleep further amplifies emotional dysregulation and caregiver burden, creating a cycle of fatigue and psychological distress that undermines caregiver health, family functioning and the ability to provide consistent support (Alhola& Polo-Kantola, 2007; GüvenBaysal&Çorabay, 2024). Scalable, non-pharmacological interventions are therefore needed, as long-term reliance on medication for stress or sleep is rarely sustainable.

Mind–body practices that cultivate conscious awareness, such as yoga and meditation, have demonstrated benefits for stress reduction and sleep regulation across both healthy and clinical populations (de Manincor et al., 2016; Chhugani et al., 2018). Meta-analyses report moderate pooled effects on stress, anxiety and depression (standardised mean difference ≈ –0.5) and clinically meaningful improvements in sleep quality, with pooled Pittsburgh Sleep Quality Index (PSQI) reductions of 3–4 points (Pascoe et al., 2017; Schleinzer et al., 2024; Ong et al., 2014). Among caregivers, integrated yoga has produced ≈35 % reductions in depression and ≈28 % improvements in PSQI among Alzheimer's caregivers (Chhugani et al., 2018), and individualised yoga has yielded ≈40 % reductions in depression and anxiety in primary care populations (de Manincor et al., 2016). Yet few studies have examined parents of children with developmental disabilities specifically.

Cyclic Meditation (CM), developed at S-VYASA University, is a structured yoga-based programme alternating mild physical stimulation with deep relaxation under mindful awareness (Subramanya&Telles, 2009; Telles et al., 1993; Vinchurkar et al., 2014; Ranisha&Kumari, 2024). This quasi-experimental study investigated the association between CM and validated measures of depression, anxiety, stress (DASS-21) and sleep quality (PSQI) in caregivers of children with developmental disabilities.

3.Methods

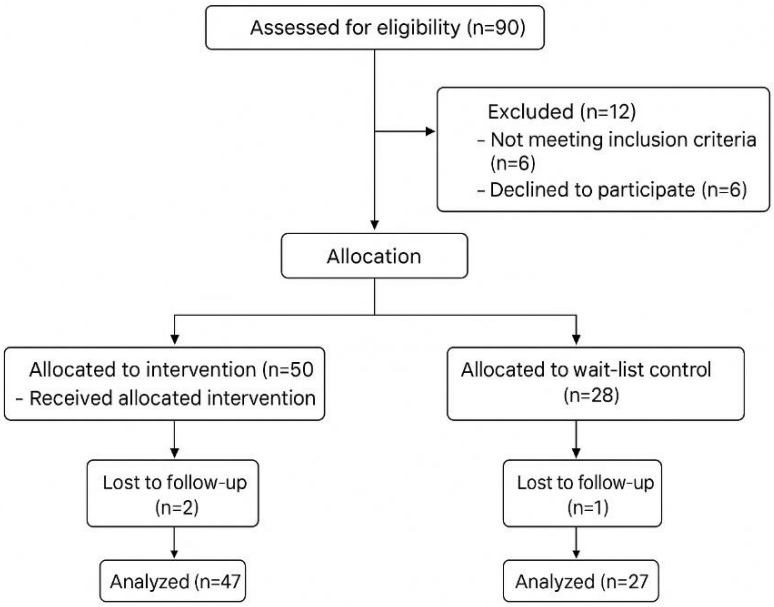
Study Design and Setting

We conducted a two-group, pre–post, quasi-experimental study to examine the association of Cyclic Meditation (CM) with psychological distress and sleep quality in caregivers of children with developmental disabilities. The study took place at the All India Institute of Speech and Hearing (AIISH), Mysuru, India, in collaboration with S-VYASA University. Ethical approval was granted by the AIISH Research Department, and written informed consent was obtained from all participants. The design and reporting adhered to STROBE recommendations for observational interventions and to the CONSORT extension for non-randomised designs.

Participant Flow and Recruitment

Caregivers were recruited through outpatient clinics and community outreach programmes at AIISH. Eligibility criteria included: (i) primary caregiver of a child diagnosed with autism spectrum disorder, intellectual disability, ADHD or hearing loss; (ii) age ≥18 years; and (iii) willingness to participate in a 30-day programme. Exclusion criteria were acute medical or psychiatric illness or concurrent participation in structured yoga/meditation. Of 90 caregivers screened, 78 enrolled; 74 (47 CM, 27 control) completed both baseline and post-intervention assessments (Figure 1).

Fig 1: shows the CONSORT-style flow of participants through screening, allocation, attrition, and analysis.



Group Allocation

Participants were scheduled by convenience into the CM or control condition, resulting in a non-randomised design. Control participants continued usual care and were offered CM after the study period. We acknowledge that the absence of randomisation and of an active comparator may introduce bias and limits causal inference.

Sample Size and Power Analysis

A priori power analysis (G*Power 3.1) assumed a large effect size (Cohen's d = 0.80), α = 0.05 (two-tailed) and 80 % power, indicating a minimum of 52 participants. To accommodate attrition, approximately 90 caregivers were approached.

Participant Flow and Group Allocation

As shown in Figure 1, 90 caregivers were assessed for eligibility. Twelve were excluded (six did not meet inclusion criteria and six declined participation), leaving 78 enrolled participants. Fifty were allocated to the Cyclic Meditation (CM) intervention group and 28 to the wait-list control group. All 50 intervention participants initially received the allocated CM programme; two were lost to follow-up before post-intervention assessment. One participant in the control group was lost to follow-up. Thus, 47 CM participants and 27 control participants completed both baseline and post-intervention assessments and were included in the final analysis.

Intervention

The CM programme, delivered by certified S-VYASA instructors, consisted of ~30-minute sessions incorporating opening prayer, Instant Relaxation Technique, Linear Awareness–Tadasana, ArdhakatiChakrasana, Quick Relaxation Technique, Vajrasana–Shashankasana–Ushtrasana, Deep Relaxation Technique and closing prayer (Nagendra&Telles, 2004). Sessions occurred in groups of 8–12 participants, five times per week for six weeks. Completers attended a mean of 27.6 ± 1.8 sessions (range 25–30). Adherence was defined as ≥80 % attendance. Two intervention participants and one control participant were lost to follow-up. No adverse events were reported.

Measures

Psychological distress: Stress, anxiety and depression were assessed with the 21-item Depression Anxiety Stress Scales (DASS-21; Lovibond&Lovibond, 1995).

Sleep quality: Measured with the Pittsburgh Sleep Quality Index (PSQI; Buysse et al., 1989).

Demographics: Age, sex, education, relationship to the child, number of children and child's diagnosis were recorded to describe the sample and explore potential confounders.

All instruments were administered at baseline and immediately post-intervention by trained assessors blinded to group allocation.

Statistical Analysis

Analyses were conducted in IBM SPSS Statistics (v29). Baseline differences were tested using independent-samples t-tests for continuous variables and χ^2 or Fisher's exact tests for categorical variables. Within-group pre–post changes were examined with paired-samples t-tests. Between-group differences at post-test were analysed with analysis of covariance (ANCOVA) controlling for baseline scores. Adjusted means with standard errors (SE) are reported. Within-group effects are expressed as Cohen's d (paired-samples), and between-group effects as partial η^2 with 95 % confidence intervals. Bonferroni and false-discovery-rate corrections were applied for multiple comparisons. Assumptions of ANCOVA were checked visually (residual and Q–Q plots) and showed no substantial violations.

Results

Participant Characteristics

Seventy-four caregivers completed both baseline and post-intervention assessments (Cyclic Meditation group: n = 47; control group: n = 27). Participants in the intervention group had a mean age of 33.6 ± 5.9 years, compared with 30.5 ± 4.8 years in the control group. Most respondents were mothers, with a smaller proportion of fathers and other relatives. The median number of children was two (IQR 1–2) in the intervention group and one (IQR 1–2) in the control group. The mean age of the child receiving special care was 5.3 ± 1.2 years in the intervention group and 5.2 ± 1.3 years in the control group. Children's diagnoses included autism spectrum disorder (ASD), ASD with specific learning disorder or intellectual disability, hearing loss, and ADHD or other conditions. No statistically significant differences were observed between groups at baseline on demographic variables or outcome measures ($p > .05$; Table 1).

Table 1. Baseline characteristics of participants by group (N = 74)

Variable	Intervention (n=47)	Control (n=27)	p-value*
Age, mean ± SD (years)	33.6 ± 5.9	30.5 ± 4.8	0.08
No. of children, median (IQR)	2 (1–2)	1 (1–2)	0.09
Special child age, mean ± SD	5.3 ± 1.2	5.2 ± 1.3	0.67
Diagnosis of child, n (%)			
– Autism spectrum disorder (ASD)	24 (51%)	12 (44%)	
– ASD with SLD / ID	10 (21%)	3 (11%)	
– Hearing loss / HL	6 (13%)	5 (18%)	
– ADHD / other	7 (15%)	7 (26%)	

Note:

Values are presented as mean ± SD for continuous variables or n (%) for categorical variables unless otherwise stated. Number of children is presented as median (IQR) due to non-normal distribution. P-values were obtained using independent-samples t-tests for continuous variables and χ^2 or Fisher's exact tests for categorical variables. ASD = autism

spectrum disorder; SLD = specific learning disorder; ID = intellectual disability; HL = hearing loss. No statistically significant differences were observed between groups at baseline.

Exploratory Analysis of Demographic Variables

Exploratory analyses indicated that baseline demographic and caregiving characteristics (age, sex, education, relationship to the child, number of children and diagnosis) were not significantly associated with initial DASS-21 or PSQI scores, nor did they moderate pre–post changes within either group (all p > .10). High adherence (≥80 % attendance) was observed across demographic strata. These findings suggest that the observed improvements in psychological distress and sleep quality were consistent across caregiver subgroups, although the modest sample size limits power to detect small moderating effects.

Psychological Outcomes

Participants in the Cyclic Meditation group reported large within-group reductions in depressive symptoms, whereas the control group showed no meaningful change. ANCOVA adjusting for baseline scores confirmed highly significant between-group differences at post-test with very large effect sizes (Table 2; Figure 2).

Table 2. DASS–Depression (Adjusted ANCOVA and Within-Group Changes)

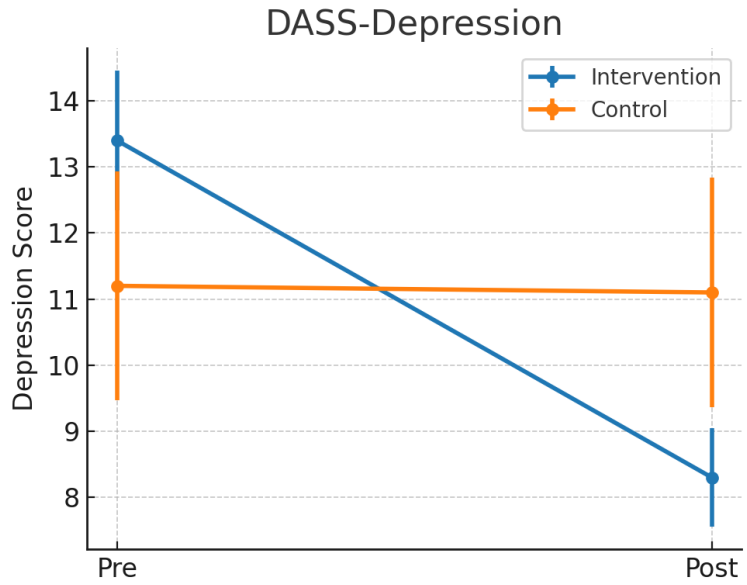
Group	N	Pre-Mean (SD)	Post Mean (SD)	Adjusted Post Mean* (SE)	Mean Change (95 % CI)	p (paired)	Cohen's *dz* (95 % CI)
Intervention	47	13.4 (3.7)	8.3 (2.6)	8.2 (0.3)	−5.1 [−5.9, −4.3]	<0.0001	−1.84 [−2.18, −1.50]
Control	27	11.2 (4.6)	11.1 (4.6)	11.3 (0.4)	−0.1 [−0.5, +0.3]	0.7	−0.07 [−0.39, +0.25]

Between-group adjusted difference at Post* (Intervention – Control) = −4.38 points (p < 0.0001, Partial $\eta^2 = 0.53$)

_{Notes: Same conventions as Table 1. Negative values = improvement. Partial η² around 0.5 reflects a very large between-group effect.}

Figure 2.

Effect of the intervention on DASS–Depression scores. Mean (±95 % CI) Depression scores at pre- and post-test for the intervention and control groups.



Cyclic Meditation participants showed marked reductions in anxiety symptoms, whereas the control group showed a slight, non-significant increase. ANCOVA adjusting for baseline scores confirmed highly significant between-group differences at post-test with very large effect sizes (Table 3; Figure 3).

Psychological Outcomes – Anxiety

Table 3. DASS–Anxiety (Adjusted ANCOVA and Within-Group Changes)

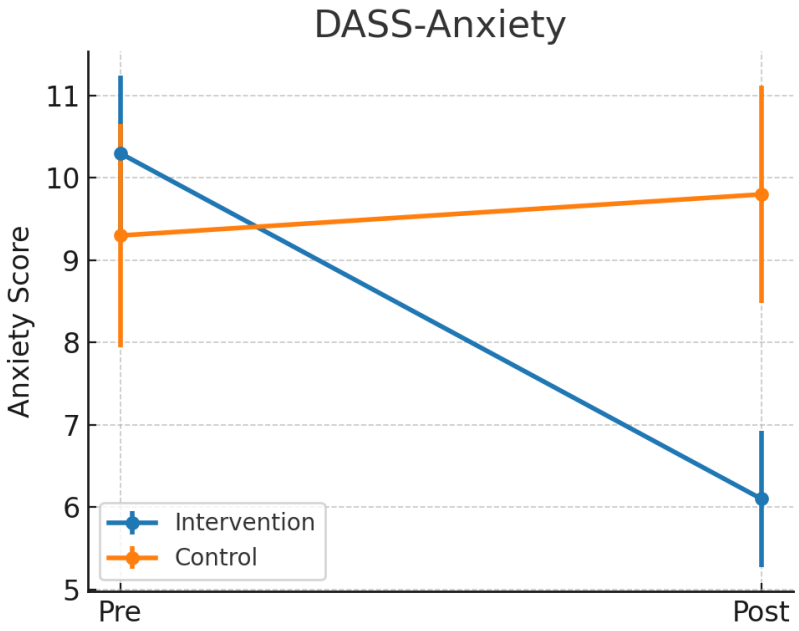
Group	N	Pre-Mean (SD)	Post Mean (SD)	Adjusted Post Mean* (SE)	Mean Change (95 % CI)	p (paired)	Cohen's *dz* (95 % CI)
Intervention	47	10.3 (3.3)	6.1 (2.9)	6.0 (0.3)	−4.2 [−4.8, −3.6]	<0.0001	−1.96 [−2.31, −1.60]
Control	27	9.3 (3.6)	9.8 (3.5)	9.9 (0.4)	+0.4 [−0.1, +1.0]	0.1	+0.32 [−0.03, +0.66]

Between-group adjusted difference at Post*(Intervention – Control) = −4.42 points ($p < 0.0001$, Partial $\eta^2 = 0.60$)

_{Notes: Same conventions as Table 1. Lower scores indicate less anxiety. Negative mean change denotes improvement. Effect size interpretation: small ~0.2, medium ~0.5, large ≥0.8.}

Figure 3.

Effect of the intervention on DASS–Anxiety scores. Mean (±95 % CI) Anxiety scores at pre- and post-test for the intervention and control groups.



Psychological Outcomes – Stress

The Cyclic Meditation group exhibited large reductions in stress symptoms compared with virtually no change in the control group. ANCOVA adjusting for baseline scores confirmed highly significant between-group differences at post-test with very large effect sizes (Table 4; Figure 4).

Table 4. DASS–Stress (Adjusted ANCOVA and Within-Group Changes)

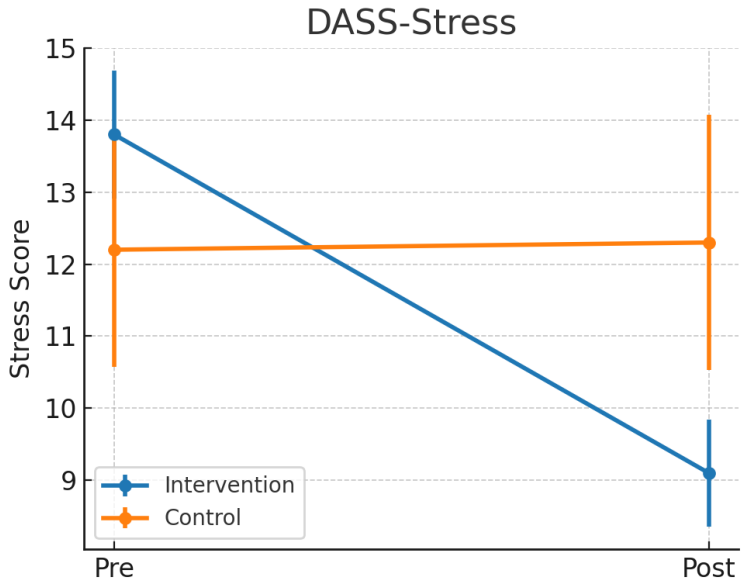
Group	N	Pre-Mean (SD)	Post Mean (SD)	Adjusted Post Mean* (SE)	Mean Change (95 % CI)	p (paired)	Cohen's *dz* (95 % CI)
Intervention	47	13.8 (3.1)	9.1 (2.6)	9.0 (0.3)	−4.7 [−5.3, −4.1]	<0.0001	−2.25 [−2.62, −1.89]
Control	27	12.2 (4.3)	12.3 (4.7)	12.4 (0.4)	+0.2 [−0.3, +0.6]	0.46	+0.14 [−0.16, +0.45]

Between-group adjusted difference at Post*(Intervention – Control) = −4.63 points ($p < 0.0001$, Partial $\eta^2 = 0.62$)

_{Notes: Pre = baseline score; Post = follow-up score. Adjusted Post Mean = estimated marginal mean from ANCOVA controlling for baseline. Cohen's dz is the paired-samples effect size; 95 % CIs are approximate. Partial η² ≥0.14 indicates a large effect.}

Figure 4.

Effect of the intervention on DASS–Stress scores. Mean (±95 % CI) Stress scores at pre- and post-test for the intervention and control groups.



Sleep Outcomes – PSQI

Sleep quality improved substantially in the Cyclic Meditation group relative to only modest change in the control group. ANCOVA adjusting for baseline scores confirmed a significant between-group difference at post-test with a large effect size (Table 5; Figure 5).

Table 5: Pittsburgh Sleep Quality Index (PSQI): Adjusted ANCOVA and Within-Group Changes

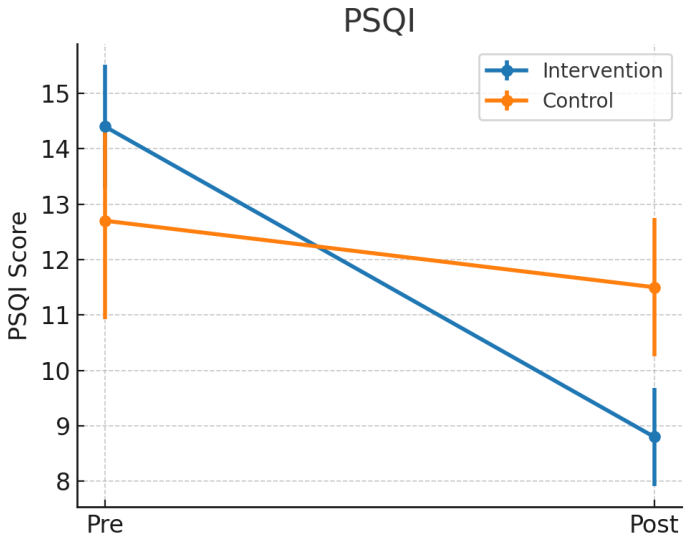
Group	N	Pre-Mean (SD)	Post Mean (SD)	Adjusted Post Mean* (SE)	Mean Change (95 % CI)	p (paired)	Cohen's *dz* (95 % CI)
Intervention	47	14.4 (3.9)	8.8 (3.1)	8.7 (0.3)	−5.6 [−6.4, −4.7]	<0.0001	−1.95 [−2.30, −1.60]
Control	27	12.7 (4.7)	11.5 (3.3)	11.6 (0.4)	−1.3 [−2.1, −0.4]	0.0065	−0.57 [−0.88, −0.26]

Between-group adjusted difference at Post* (Intervention – Control) = −3.65 points ($p < 0.0001$, Partial $\eta^2 = 0.43$)

_{**Notes:** PSQI = Pittsburgh Sleep Quality Index. Lower scores = better sleep quality. Adjusted Post Mean from ANCOVA controlling for baseline. Cohen's dz and Partial η² interpreted as above.}

Figure 5.

Effect of the intervention on PSQI scores.Mean (±95 % CI) PSQI scores at pre- and post-test for the intervention and control groups.



5. Discussion

This non-randomised, quasi-experimental study explored the association of a 30-day Cyclic Meditation (CM) programme with psychological distress and sleep quality in caregivers of children with developmental disabilities. Across four validated outcomes—depression, anxiety and stress (DASS-21) and sleep quality (PSQI)—participants in the CM group reported large, clinically meaningful improvements relative to controls. Adjusted analyses of covariance controlling for baseline scores indicated highly significant between-group differences at post-test with very large effect sizes (partial η^2 = 0.43–0.62). Within-group changes in the CM arm were substantial (paired-samples Cohen's dz ≈ −1.8 to −2.3), whereas the control arm showed negligible change on DASS measures and only modest improvement in PSQI. All primary outcomes remained significant after multiplicity correction (Bonferroni/FDR). For example, the mean PSQI reduction of −5.6 points in the CM group exceeded the pooled 3-point reduction reported in prior meta-analyses of meditation and yoga interventions (Ong et al., 2014; Pascoe et al., 2017; Schleinzer et al., 2024). Because allocation was not randomised and no active comparator was included, residual confounding and expectancy effects cannot be excluded; these findings should therefore be interpreted as associations rather than evidence of causality.

Exploratory analyses suggested that baseline demographic and caregiving characteristics did not significantly influence initial scores or pre–post changes. Improvements appeared consistent across caregiver subgroups, although the modest sample size limits power to detect small moderating effects.

Comparison with Prior Research

The present findings extend evidence on yoga-based interventions for caregivers. Integrated yoga programmes have been linked to ≈35 % reductions in depression and ≈28 % improvements in PSQI among Alzheimer's caregivers (Chhugani et al., 2018), and individualised yoga has produced ≈40 % reductions in depression and anxiety in primary care populations (de Manincor et al., 2016). Recent systematic reviews report moderate pooled effects for stress reduction (SMD ≈ −0.55) and PSQI improvements of 3–4 points across diverse populations (Schleinzer et al., 2024). Our results are consistent with earlier yoga and meditation studies showing reductions in stress, anxiety and depression in high-stress groups (Pascoe et al., 2017; Subramanya&Telles, 2009; Black &Slavich, 2016). In this study, participants in the CM group reported mean reductions of 5.1–5.6 points on DASS-Depression and PSQI, with very large within-group effects (Cohen's dz ≈ −1.8 to −2.3; partial η^2 up to 0.62). These magnitudes exceed the average effects reported in meta-analyses of meditation interventions (SMD −0.5 to −0.8; Pascoe et al., 2017). Taken together, these converging data highlight CM as a potentially low-cost, scalable adjunct for caregivers of children with developmental disabilities, an underserved population at high psychological risk.

Potential Mechanisms and Future Research

Because this non-randomised study did not assess physiological biomarkers, the pathways underlying the observed associations remain speculative. Nonetheless, prior research offers biologically plausible explanations. CM has been associated with enhanced parasympathetic activity and a shift in sympathovagal balance toward relaxation (Subramanya&Telles, 2009; Vinchurkar et al., 2014). Meditation practices more broadly are linked to modulation of the hypothalamic–pituitary–adrenal axis, including lower circulating and salivary cortisol and a more adaptive diurnal cortisol slope (Pascoe et al., 2017), as well as reductions in pro-inflammatory cytokines such as interleukin-6 and C-reactive protein (Black &Slavich, 2016). Neuroimaging studies show structural and

functional changes in prefrontal–limbic regions—including the amygdala and hippocampus—after meditation, which are implicated in enhanced attentional control and emotion regulation (Fox et al., 2016). Improved sleep quality itself may act as both an outcome and a mediator; meditation has been associated with better subjective sleep and favourable nocturnal autonomic profiles (Ong et al., 2014), which may restore HPA homeostasis and enhance daytime resilience. Future studies should test these mechanisms directly using objective measures such as heart-rate variability, cortisol, inflammatory cytokines and actigraphy, and employ randomised controlled designs with active comparators and longer follow-up to confirm and extend these preliminary findings.

Strengths and Limitations

This study has several strengths. The Cyclic Meditation protocol was standardised, replicable and delivered under supervision, supporting intervention fidelity. Validated outcome measures (DASS-21 and PSQI) were employed, and adherence was high, indicating feasibility in a caregiver population. Effect sizes with 95 % confidence intervals were reported alongside p-values, which improves statistical transparency and interpretability. Important limitations must also be acknowledged. The non-randomised, quasi-experimental design may introduce selection bias and unmeasured confounding; accordingly, the findings should be interpreted as **associations rather than evidence of causality**. No active comparator condition (e.g. relaxation or education control) was included, which limits attribution of effects solely to Cyclic Meditation. The sample was modest in size, predominantly female and socio-demographically narrow, reducing generalisability and increasing the possibility of inflated effect sizes due to expectancy effects. These limitations should be taken into account when interpreting the present results and in designing future randomised, controlled studies with more diverse samples and active comparators.

Conclusions and Implications

This non-randomised, quasi-experimental study found that participation in Cyclic Meditation was **associated with** marked reductions in depressive symptoms, anxiety, stress and improved sleep quality among caregivers of children with developmental disabilities. The programme was brief (~30 minutes per session), required minimal equipment and achieved high adherence, indicating good feasibility and acceptability.

Because allocation was non-randomised, no active comparator was used and outcomes were assessed only immediately post-intervention, these findings represent associations rather than evidence of causality. Residual confounding, expectancy effects and lack of follow-up may also have influenced the observed effects.

Nevertheless, the brevity and low cost of Cyclic Meditation suggest potential for integration into caregiver support services, rehabilitation centres and community health programmes, particularly in resource-limited settings. Larger, randomised controlled trials with active comparators, more diverse samples, extended follow-up and objective physiological measures are needed to confirm these preliminary associations, clarify underlying mechanisms and inform possible inclusion of Cyclic Meditation in evidence-based caregiver support initiatives.

References

1. Alhola, P., & Polo-Kantola, P. (2007). Sleep deprivation: Impact on cognitive performance. *Neuropsychiatric Disease and Treatment, 3*(5), 553–567. https://pubmed.ncbi.nlm.nih.gov/19300585

2. Alghosi, M., Sharifi, M., Namavari, S., Rajamand, N., Bamorovat, F., Norouzi, N., Alimoradi, M., &Konrad, A. (2025). The effect of chronic yoga interventions on sleep quality in people with sleep disorders: A scoping review. *Frontiers in Neurology, 16,* 1566445. https://doi.org/10.3389/fneur.2025.1566445
3. Black, D. S., &Slavich, G. M. (2016). Mindfulness meditation and the immune system: A systematic review of randomized controlled trials. *Annals of the New York Academy of Sciences, 1373*(1), 13–24. https://doi.org/10.1111/nyas.12998
4. Buysse, D. J., Reynolds, C. F., III, Monk, T. H., Berman, S. R., &Kupfer, D. J. (1989). The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research. *Psychiatry Research, 28*(2), 193–213. https://doi.org/10.1016/0165-1781(89)90047-4
5. Carpenter, J. S., &Andrykowski, M. A. (1998). Psychometric evaluation of the Pittsburgh Sleep Quality Index. *Journal of Psychosomatic Research, 45*(1), 5–13. https://doi.org/10.1016/S0022-3999(97)00298-5
6. Chhugani, K. J., Metri, K., Babu, N., &Nagendra, H. R. (2018). Effects of integrated yoga intervention on psychopathologies and sleep quality among professional caregivers of older adults with Alzheimer's disease: A controlled pilot study. *Advances in Mind-Body Medicine, 32*(3), 18–22.
7. deManincor, M., Bensoussan, A., Smith, C. A., Barr, K., Schweickle, M., Donoghoe, L. L., Bourchier, S., & Fahey, P. (2016). Individualized yoga for reducing depression and anxiety, and improving well-being: A randomized controlled trial. *Depression and Anxiety, 33*(9), 816–828. https://doi.org/10.1002/da.22502
8. Feizi, A., Najmi, B., Salesi, A., Chorami, M., &Hoveidafar, R. (2014). Parenting stress among mothers of children with different physical, mental, and psychological problems. *Journal of Research in Medical Sciences, 19*(2), 145–152. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3999601/
9. Fox, K. C., Dixon, M. L., Nijeboer, S., Girn, M., Floman, J. L., Lifshitz, M., Ellamil, M., Sedlmeier, P., &Christoff, K. (2016). Functional neuroanatomy of meditation: A review and meta-analysis of 78 functional neuroimaging investigations. *Neuroscience &Biobehavioral Reviews, 65,* 208–228. https://doi.org/10.1016/j.neubiorev.2016.03.021
10. GüvenBaysal, Ş., &Çorabay, S. (2024). Caregiver burden and depression in parents of children with chronic diseases. *Turkish Archives of Pediatrics, 59*(1), 70–77. https://doi.org/10.5152/TurkArchPediatr.2024.23126
11. Hayes, S. A., & Watson, S. L. (2013). The impact of parenting stress: A meta-analysis of studies comparing the experience of parenting stress in parents of children with and without autism spectrum disorder. *Journal of Autism and Developmental Disorders, 43*(3), 629–642. https://doi.org/10.1007/s10803-012-1604-y
12. Lovibond, S. H., &Lovibond, P. F. (1995). *Manual for the Depression Anxiety Stress Scales* (2nd ed.). Psychology Foundation.
13. Ong, J. C., Manber, R., Segal, Z., Xia, Y., Shapiro, S., & Wyatt, J. K. (2014). A randomized controlled trial of mindfulness meditation for chronic insomnia. *Sleep, 37*(9), 1553–1563. https://doi.org/10.5665/sleep.4010
14. Pascoe, M. C., Thompson, D. R., Jenkins, Z. M., & Ski, C. F. (2017). Mindfulness mediates the physiological markers of stress: Systematic review and meta-analysis. *Journal of Psychiatric Research, 95,* 156–178. https://doi.org/10.1016/j.jpsychires.2017.08.004
15. Raina, P., O'Donnell, M., Schwellnus, H., Rosenbaum, P., King, G., Brehaut, J., Russell, D., Swinton, M., King, S., Wong, M., Walter, S. D., & Wood, E. (2004). Caregiving process and caregiver burden: Conceptual models to guide research and practice. *BMC Pediatrics, 4,* 1. https://doi.org/10.1186/1471-2431-4-1
16. Schleinzer, A., Moosburner, A., Anheyer, D., Burgahn, L., & Cramer, H. (2024). Effects of yoga on stress in stressed adults: A systematic review and meta-analysis. *Frontiers in Psychiatry, 15,* 1437902. https://doi.org/10.3389/fpsyt.2024.1437902
17. Ranisha, K., &Kumari, S. (2024). Effect of a yogic stress management technique (cyclic meditation) on stress, mindfulness, and well-being: A systematic review. *Yoga Mimamsa, 56*(2), 129–140. https://doi.org/10.4103/ym.ym_51_24

18. Singh, A., & Ali, A. (2023). Psychometric properties of Psychosocial Inventory for Caregivers (PIC) scale. *Indian Journal of Psychiatry, 65*(3), 334–344. https://doi.org/10.4103/indianjpsychiatry.indianjpsychiatry_407_22
19. Shiri, V., Hosseini, A. S., Nobakht, Z., Nosratabadi, M., Vahedi, M., &Pishyareh, E. (2025). Investigating the parenting style of parents of children with autism spectrum disorder: A systematic review. *Neuropsychiatry, 15*(1), 757. https://doi.org/10.37532/1758-2008.2025.15(1).757
20. Vinchurkar, S. A., Deepeshwar, S., Visweswaraiah, N. K., &Nagendra, H. R. (2014). Immediate effects of cyclic meditation on state mindfulness in normal healthy volunteers: A controlled study. *Indian Journal of Positive Psychology, 5*(4), 400–403. http://www.iahrw.com/index.php/home/journal_detail/194#list
21. Telles, S., Joseph, C., Venkatesh, S., &Desiraju, T. (1993). Alterations of auditory middle latency evoked potentials during yogic consciously regulated breathing and attentive state of mind. *International Journal of Psychophysiology, 14*(3), 189–198. https://doi.org/10.1016/0167-8760(93)90033-L
22. Subramanya, P., &Telles, S. (2009). A review of the scientific studies on cyclic meditation. *International Journal of Yoga, 2*(2), 46–48. https://doi.org/10.4103/0973-6131.60043