

# Effect of Yoga on the Mental Wellbeing of Caregivers of Children with Special Needs: A Randomised Controlled Study

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## ABSTRACT

**Introduction:** Children with special needs require additional assistance in their everyday activities. The involvement of parental caregivers in their child's life is influenced by the severity of the child's disability. Although caregiving can be deeply fulfilling, it is often physically and emotionally taxing. The ongoing stress of caregiving may intensify the burden, negatively affecting caregivers' physical and mental wellbeing and increasing the risk of anxiety, depression, and the worsening of existing health issues.

**Aim:** To study the effect of yoga on the mental wellbeing of caregivers of children with special needs.

**Materials and Methods:** This randomised controlled study was conducted at Satya Special School in Pondicherry, India, from July 2022 to September 2023. After obtaining ethical clearance from the institute, 68 parental caregivers were selected as eligible caregivers, who satisfied the inclusion criteria and did not meet any exclusion conditions were then randomly assigned into two groups. The intervention group engaged in yoga sessions lasting one hour, conducted twice per week for a duration of 24 weeks.

Psychological outcomes were assessed using two standardised scales. The Zarit Burden Interview (ZBI) and the Depression, Anxiety, Stress Scale (DASS-21)—administered at pretest, midtest, and post-test, along with a general demographic form at baseline. Descriptive statistics such as mean, median and interquartile range was assessed using the Mann-Whitney test, with analyses performed in Statistical Package for the Social Sciences (SPSS) Statistics for Windows, version 16.0.

**Results:** The findings indicated that parents in the intervention group reported a decrease in caregiver burden, depression, anxiety, and stress after the yoga sessions (p-value <0.05). However, in the control group there was a significant increase in both caregivers' burden and DASS-21 scores from pretest to post-test (p-value <0.05). In intergroup comparison, caregiver burden, anxiety, depression, and stress were significantly lower in the experimental group than in the control group at post-test (p-value <0.001).

**Conclusion:** Yoga was effective in alleviating stress, caregiver burden, depression and anxiety, while improving the quality of life among parental caregivers.

**Keywords:** Anxiety, Caregivers, Depression, Stress, Zarit caregiver burden scale

## INTRODUCTION

A caregiver is one who takes care of those who need assistance for their daily routine. Those receiving care could be children, elderly or the sick. The immediate family members such as siblings, parents etc., fall under the informal caregiver category and therapist and teachers come under the formal category of caregivers. Parents caring for children with special needs are responsible for managing a wide range of daily activities such as feeding, bathing, administering medication, planning routines, ensuring safety, arranging transportation, and making important financial and healthcare decisions. While caregiving can bring a sense of fulfilment, it is also demanding and often overwhelming. Many caregivers experience high levels of stress, anxiety, and emotional exhaustion, along with physical fatigue, psychological strain, and financial pressure [1]. These challenges can disrupt family functioning, limit social engagement, and compromise the caregivers' overall wellbeing [2].

In Indian yogic terminology, the term "Yoga" is derived from the Sanskrit word "Yuj," meaning to yoke or join together. It signifies the union of the body and the mind. Yoga is an ancient Indian practice that integrates physical postures (*asanas*), breathing techniques (*pranayama*), and meditation. It is described by sages as the control of the mind and the stilling of the whirlpools of the mind (*chitta vritti nirodha*) [3]. Yoga promotes physical and mental wellbeing, enhancing balance, strength, flexibility, and a sense of calm. It also acts as a complementary therapy for individuals

with physical and mental disorders. The practice of *asanas*, *pranayama*, and *dhyana* leads to improvements in mental and physical health [3].

Parental caregivers experience mental stress, and with the help of yoga therapy, they can enhance their wellbeing and better manage daily life, with regular improvements in their health and emotional state [4]. Globally, few studies have examined parental caregivers of children with special needs [5,6]. Research addressing the issues of depression, anxiety, stress, and caregiver burden remains scarce among parental caregivers of in Puducherry, India, as well as interventions to reduce these issues. Thus, the aim of this study was to assess the effect of yoga on the mental wellbeing of caregivers of children with special needs. The current study is part of a doctoral study on teachers and parental caregivers of special needs children in Puducherry, India.

## MATERIALS AND METHODS

This study was an open-label randomised controlled trial conducted in a special educational institution in Pondicherry, India, over a period of eighteen months (July 2022–September 2023). Ethical approval for the research was secured from the Institutional Human Ethics Committee (Ph.D. PROJECT/C4/2019/D06), and registered with the Clinical Trial Registry of India (CTRI/2019/12/022508).

**Inclusion criteria:** The study was open to parental caregivers of children with special needs, regardless of gender, who provided informed consent. Primary parental caregivers aged 18 to 50 years

with children with special needs under 18 years of age were included in the study.

**Exclusion criteria:** Parental caregivers who had undergone surgery, pregnant or lactating women, parents with a background of alcoholism and those with psychotic conditions were excluded from the study. Children identified as having special needs were those diagnosed with disorders such as Attention-Deficit/Hyperactivity Disorder (ADHD), Autism Spectrum Disorder (ASD), Cerebral Palsy (CP), Down syndrome, co-existing CP with Down syndrome, or intellectual disabilities [7].

**Sample size calculation:** Sample size estimation was performed using a standard formula, applying  $p_1$  and  $p_2$  values derived from the pilot study findings:

$$n_1 = \frac{P(1 - P)(Z_1 - \alpha_{/2} + Z_1 - \beta)}{(P_1 - P_2)}$$

$Z_1 - \alpha_{/2}$  1.96 at 95% of confidence with  $\alpha=0.05$

$Z_1 - \beta=1.28$  at 90% of power with  $\beta=0.10$

$p_1=8/15=0.5333$  (the number of subjects categorised as having moderate to severe burden in the pre-test, based on the pilot study).

$p_2=2/15=0.1333$  (the number of subjects categorised as having moderate to severe burden in the post-test from pilot study results).

$P=(p_1+p_2)/2=(0.5333+0.1333)/2=0.3333$

Considering a 15% attrition rate, the minimum sample size required was 34 in each group.

**Description of tools:** The study assessed two psychological constructs using two instruments: ZBI and the DASS-21. These instruments were selected for their validated use in research with parental caregivers and their ability to assess different aspects of mental health. Together, these tools enabled a well-rounded evaluation of caregivers' overall wellbeing, encompassing both their subjective experiences and objectively measured outcomes.

**Zarit Burden Interview (ZBI):** ZBI developed by Zarit SH et al., was used to assess the caregiver burden. The original version contained 29 items, with a widely used 22-item version now common. The questionnaire evaluates the impact on emotional wellbeing due to caregiving. A five-point scale—ranging from “never” to “nearly always” is used for the first 21 questions and a different response format was used for the 22<sup>nd</sup> question (no burden, mild, moderate, severe, extreme burden), also scored 0-4. Scores are summed across items, with higher totals indicating greater caregiver burden [8,9].

**Depression Anxiety Stress Scale (DASS-21):** The DASS-21 is a standardised self-report instrument developed to evaluate an individual's emotional states across three key domains—depression, anxiety, and stress. It comprises 21 items, divided equally into three subscales containing seven items each. The depression subscale assesses emotional characteristics such as hopelessness, loss of interest, devaluation of life, dysphoria, and self-criticism, offering valuable insight into depressive tendencies. Scores range from normal (0-9) to extremely severe (28+) [10]. The anxiety subscale is designed to assess situational anxiety along with related physical and psychological responses, including muscular tension, autonomic activation, and subjective feelings of apprehension. It captures the complex nature of anxiety by addressing both its physiological and emotional components. Scores range from normal (0-7) to extremely severe (20+), depending on symptom intensity [10]. The stress component measures tendencies like being easily upset, irritability, overactivity, impatience, nervous arousal, and difficulty relaxing. It offers insights into the individual's responses to stressors and their ability to cope with stress. Scores range from a minimum of 0-7 (normal) to a maximum of 20+ (extremely severe) [10]. Overall, the DASS-21 provides a comprehensive assessment of an individual's

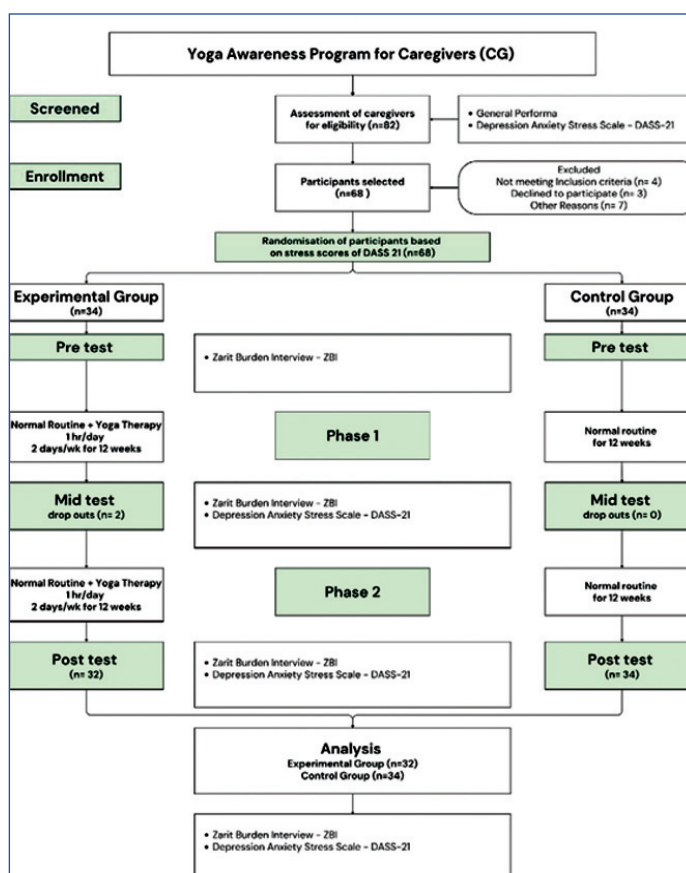
emotional wellbeing, specifically focusing on depression, anxiety, and stress through its distinct scales and subscales.

## Study Procedure

In this study, 82 participants were approached to participate in the yoga awareness session. A general proforma capturing socio-demographic details along with DASS-21 scores was recorded. Based on the inclusion and exclusion criteria, four participants did not meet the criteria, three declined to participate, and seven expressed other reasons for non participation. Ultimately, 68 participants were selected for the study.

A simple random sampling technique was used to allocate an equal number of participants into two groups: experimental and control. The ZBI was also administered to collect pretest data. Both instruments were carefully selected to gain a comprehensive understanding of the psychological aspects of the participants.

The experimental group received one hour of yoga therapy twice a week for 12 weeks, while the control group continued their normal routine. A midtest was conducted after 12 weeks to assess the same two parameters. There were two dropouts in the experimental group and no dropouts in the control group. Both groups then continued their respective routines for another 12 weeks without any further dropouts. Post-test evaluations were conducted again using the same standardised tools. A total of 32 participants from the experimental group and 34 from the control group were included in the final analysis, focusing on psychological outcomes. Participants who attended at least 80% of the yoga sessions qualified for the post-test analysis. [Table/Fig-1] shows CONSORT flowchart. The yoga protocol administered to the participants is shown in [Table/Fig-2].



[Table/Fig-1]: The CONSORT chart of this study.

## STATISTICAL ANALYSIS

Normality testing was conducted using the Kolmogorov-Smirnov test. Means and medians were calculated, and data analysis was performed using SPSS Statistics for Windows, Version 16. An independent t-test was employed for normally distributed data, while the Mann-Whitney U test was applied to non normally distributed data for Intergroup comparisons. Intragroup differences in ZBI and

S. No.	Yogic techniques	Duration
1	Om chanting	2 minutes
2	Jathis (Warm-up exercises) <ul style="list-style-type: none"> <li>• Hands in and out</li> <li>• Hands stretching up and down</li> <li>• <i>Setubhandasana kriya</i></li> <li>• <i>Vyagrahapranayama</i></li> </ul>	6 minutes
3	Standing postures <ul style="list-style-type: none"> <li>• <i>Tadasana</i></li> <li>• <i>Ardhakatti chakrasana</i></li> </ul>	5 minutes
4	<i>Vibhaha pranayama</i>	5 minutes
5	Sitting postures <ul style="list-style-type: none"> <li>• <i>Vajrasana</i></li> <li>• <i>Sasangasana</i></li> </ul>	5 minutes
6	Prone and supine postures <ul style="list-style-type: none"> <li>• <i>Bhujangasana</i></li> <li>• <i>Pawanmuktasana</i></li> </ul>	5 minutes
7	Pranayama techniques <ul style="list-style-type: none"> <li>• <i>Nadisuddhi pranayama</i></li> <li>• <i>Sheetali pranayama</i></li> <li>• <i>Sitkari pranayama</i></li> <li>• <i>Bhramari pranayama</i></li> <li>• <i>Pranava japa</i></li> </ul>	15 minutes
8	<i>Marmamastam kriya</i>	15 minutes
9	Om Chanting	2 minutes

[Table/Fig-2]: The yoga protocol followed by experimental group.

DASS-21 were analysed using repeated-measures ANOVA (for normally distributed data) with post hoc analysis conducted using the Bonferroni test, and the Friedman test (for non normally distributed data) with post hoc analysis conducted using the Conover test. A p-value <0.05 was regarded as statistically significant.

## RESULTS

Sixty-six parents completed the study, with a mean participant age of 38.35±6.64 years. The majority of the participants were female 53 (80.3%). More than half of the participants were married 51 (77.3%), while the remaining were either divorced or widowed. Among the parents, the majority were unemployed or homemakers 25 (37.9%). More than half of the parents 35 (53.0%) were unskilled workers. Most of the parents belonged to a nuclear family structure, as represented in [Table/Fig-3].

Variable	Category	Frequency (n, %)
Parental sex	Female	53 (80.3)
	Male	13 (19.7)
Marital status	Married	51 (77.3)
	Separated	6 (9.1)
	Widowed	9 (13.6)
Income per month	Up to Rs. 15,000	31 (46.9)
	Rs. 15,001-Rs.25,000	6 (9.1)
	Rs.25,001-Rs.50,000	4 (6)
	Rs. 50,001-1 lac	1 (1.5)
	No Response	24 (36.4)
Employment status	Employed full time	18 (27.3)
	Employed part time	7 (10.6)
	Unemployed	25 (37.9)
	No response	16 (24.2)
Occupation	Skilled	5 (7.6)
	Unskilled	35 (53)
	No response	26 (39.4)
Religion	Christian	4 (6)
	Hindu	57 (86.4)
	Muslim	4 (6)
	No response	1 (1.5)

Family structure	Nuclear family	52 (78.8)
	Joint family	13 (19.7)
	No response	1 (1.5)

[Table/Fig-3]: Socio-demographic details of the study population.

The ZBI parameter was analysed using a Student's t-test between the experimental and control groups and showed that after intervention the experimental group had significant reduction when compared to the control (p-value <0.001). The same parameter was analysed using repeated-measures ANOVA and Friedman's test within the groups, as represented in [Table/Fig-4]. The results indicated that the experimental group (p-value <0.001) showed a decrease in caregiver burden, while there was an increase in control group in the within-group analysis from pre- to post-test (p-value <0.001).

Similarly, no significant difference was observed for depression, stress, and anxiety between the groups at pretest (p-value>0.05). However, at post-test, significantly lower levels of depression, stress, and anxiety were observed in the experimental group compared with the control group (p-value <0.001). The results also showed a decrease in depression, anxiety, and stress scores within the experimental group (p-value <0.001). In contrast, the control group exhibited an increase in depression, anxiety, and stress scores over the same period (p-value <0.001) [Table/Fig 5-7].

Significantly lower overall DASS scores were observed in the experimental group at both midtest and post-test (p-value <0.05). A decrease was seen in the overall DASS scores within the experimental group (p-value <0.001). Conversely, the control group showed an increase in scores over the same period (p-value <0.001), as presented in [Table/Fig-8].

## DISCUSSION

This study aimed to evaluate the effectiveness of yoga in alleviating caregiver burden as well as reducing depression, anxiety, and stress. A significant reduction was seen in ZBI and all three domains of DASS-21 of the experimental group following 24 weeks of yoga intervention. However, the control group showed an increase in caregiver burden, along with higher levels of depression, anxiety, and stress from pretest to post-test. There were no differences in the pretest parameters across the two groups. The decline in mental wellbeing—including heightened caregiver burden and increased levels of depression, anxiety, and stress—has been shown to negatively impact the physical and mental health of parental caregivers.

As per the 2011 Census of India, individuals with physical or mental disabilities constitute 2.2% of the total population. In Tamil Nadu, 1.6% of the population has disabilities, amounting to 278,294 people aged 0-19 years. According to the Child Rights Information Network (CRIN), approximately 150 million children worldwide have disabilities. Children account for 35.29% of India's total disabled population, with the highest concentration observed among those aged 10-19 years [11]. Caring for these children poses significant emotional and practical challenges for their families [2].

Several studies have reported that yoga programs are safe, feasible, acceptable, and subjectively useful for the physical and mental health of informal caregivers [12-15]. Yoga therapy is increasingly recognised as a promising form of mind-body medicine and has been gaining global acceptance as an alternative therapeutic approach [16]. Yoga practices, which include asana, pranayama, and relaxation, can enhance self-awareness and promote better coordination [17].

The findings of the present study revealed a notable reduction in caregiver burden among parental caregivers in the experimental group after undergoing the yoga intervention, which was

ZBI	Experimental		Control		t-test	p-value
	Mean±SD	Median (IQR)	Mean±SD	Median (IQR)		
Pretest	39.66±16.93	38.5 (27.5, 55.25)	39.47±14.28	41 (31.25, 51.75)	t=0.048	0.962
Midtest	35.13±16.51	35.5 (22.5, 51)	41.91±14.05	41 (35, 54.75)	MW=404.5	0.074
Post-test	29.78±15.75	29.5 (16, 45)	43.24±14.01	43 (35.25, 55)	t=-3.671	<0.001*
RMA test	589.534		43.762			
*p-value	<0.001*		<0.001*			

**[Table/Fig-4]:** Intergroup and intragroup comparison of depression of parents.  
 Note: RMA: Repeated Measures of ANOVA; t-Student t-test; \*p≤0.05 is considered as statistical significance, MW: Mann-Whitney test

Depression	Experimental		Control		t-test	p-value
	Mean±SD	Median (IQR)	Mean±SD	Median (IQR)		
Pretest	14.94±4.66	14 (12, 18)	13.06±4.1	13 (10, 16)	t= 1.743	0.086
Midtest	12.88±4.46	12 (10, 16)	13.88±4.18	14 (12, 18)	t= -0.948	0.347
Post-test	10.94±4.07	10 (8, 14)	15.29±3.81	15 (14, 18)	MW=247	<0.001*
Friedmans test	59.613		86.645			
*p-value	<0.001*		<0.001*			

**[Table/Fig-5]:** Intergroup and intragroup comparison of depression of parents.  
 Note: t-Student t-test; MW- Mann-Whitney test; \*p= ≤0.05 is considered as statistical significance

Anxiety	Experimental		Control		t-test	p-value
	Mean±SD	Median (IQR)	Mean±SD	Median (IQR)		
Pretest	10.81±3.8	10 (8, 14)	10.29±3.56	10 (8, 12)	t= 0.573	0.569
Midtest	9.38±3.27	9 (6, 12)	11.12±3.63	12 (8, 12)	MW= 393	0.048
Post-test	8.38±2.35	8 (6, 10)	12.41±3.58	12 (10, 14)	MW= 180	<0.001*
Friedmans Test	34.695		52.68			
*pvalue	<0.001*		<0.001*			

**[Table/Fig-6]:** Intergroup and intragroup comparison of anxiety of parents.  
 Note: t-Student t-test; MW - Mann-Whitney test; \*p≤0.05 is considered as statistical significance

Stress	Experimental		Control		t-test	p-value
	Mean±SD	Median (IQR)	Mean±SD	Median (IQR)		
Pretest	19.19±3.59	19 (16, 22)	18.24±3.9	18 (16.5, 21.5)	t= 1.035	0.305
Midtest	17.38±3.43	18 (15.5, 20)	19.24±3.04	20 (18, 22)	MW= 375.5	0.028
Post-test	14.94±3.37	16 (12, 18)	20.18±3.39	20 (18, 22)	MW= 149	<0.001*
Friedmans test	61.512		43.613			
*p-value	<0.001*		<0.001*			

**[Table/Fig-7]:** Intergroup and intragroup comparison of stress of parents.  
 Note: t-Student t-test; MW: Mann Whitney test; \*p≤0.05 is considered as statistical significance

DASS over all score	Experimental		Control		t-test	p-value
	Mean±SD	Median (IQR)	Mean±SD	Median (IQR)		
Pretest	44.94±8.03	44 (38, 52)	41.59±6.84	42 (38, 44)	1.828	0.072
Midtest	39.63±7.37	39 (34, 44.5)	44.24±6.34	44 (42, 47.5)	-2.73	0.008
Post-test	34.25±6.44	34 (29.5, 38)	47.88±6.25	48 (44, 52)	-8.728	<0.001*
RMA test	350.263		173.918			
*p-value	<0.001*		<0.001*			

**[Table/Fig-8]:** Intergroup and intragroup comparison of DASS overall score of parents.  
 Note: t-Student t-test; RMA: Repeated measures of ANOVA; \*p≤0.05 is considered as statistical significance

administered twice weekly for 24 weeks. This suggests that regular yoga practice, including asana, pranayama, and relaxation, may help alleviate the physical and emotional strain associated with caregiving. In contrast, the control group, which did not receive the intervention, exhibited a worsening of burden over the same duration. This indicates a progressive decline in their wellbeing without any supportive measures. The contrast between the two groups highlights the potential effectiveness of yoga in managing caregiver burden. The reduction in burden may be attributed to the calming and restorative effects of yoga on both the body and mind. These results are in agreement with the study by Hegde J et al., which established that caregivers engaged in yoga, experienced

significantly lower burden levels when compared to the control group. These outcomes underscore the importance of incorporating yoga-based strategies into caregiver support programs [18].

Postintervention assessments in the current study showed marked improvements in the experimental group in depression, anxiety, and stress, reflecting an improvement in the mental health of participants. Conversely, the control group experienced slight increases in depression, anxiety, and stress scores, indicating a decline in mental wellbeing during the same period. These findings are consistent with prior research by Ullas K et al., Hegde J et al., and Lr K et al., reported that psychological symptoms showed significant improvements in the yoga group, with marked

reductions in stress, anxiety, and depression scores from pre- to postintervention [4,18,19].

The current study showed that yoga practices assist in the reduction of scores in depression, anxiety, and stress, suggestion that yoga aids in the development of coping abilities among the parental caregivers, allowing them to manage their perspectives on life situations more positively without experiencing stress [20].

### Limitation(s)

This study was conducted at a single centre, with most participants being mothers. Moreover, information regarding the children's emotional and behavioural functioning was not collected, limiting the ability to examine its relationship with caregivers' mental health.

### CONCLUSION(S)

The findings of this study suggest that yoga can serve as an effective approach in reducing caregiver burden and stress, thereby improving their overall quality of life. Greater emphasis should be placed on raising awareness about the health challenges faced by parental caregivers and promoting yoga as a viable strategy for supporting their mental wellbeing. In the future, the sustainability of yoga's benefits should be assessed through follow-up evaluations after 9-12 months. Yoga programs should be conducted at the community level to provide support to caregivers.

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#### PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Jun 03, 2025
- Manual Googling: Jul 24, 2025
- iThenticate Software: Aug 18, 2025 (11%)

#### ETYMOLOGY: Author Origin

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- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

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