# "The Role of Yoga in Promoting Mental Resilience Among Special Educators in Puducherry"

**Philip Felix Priya[1],Ananda Balayogi Bhavanani[2], Meena Ramanathan[3], Karthik Subramanium[4],Sukanto Sarkar[5], A Lokeshmaran[6]**

*[1]Student counsellor, Student Welfare Department, Mahatma Gandhi Medical College & Research Institute, Sri Balaji Vidyapeeth (Deemed-to-be-University), Puducherry – 607402 and PhD Scholar, School ofYoga Therapy(SYT), Institute of Salutogenesis and Complimentary Medicine (ISCM), Sri Balaji Vidyapeeth (Deemed-to-be-University), Puducherry – 607402. priyaphilip12@gmail.com*
*[2] Director, ISCM, Sri Balaji Vidyapeeth (Deemed-to-be-University), Puducherry – 607402. yognat@gmail.com*
*[3] Vice Principal, SYT, ISCM, Sri Balaji Vidyapeeth (Deemed-to-be-University), Puducherry – 607402.saineema@gmail.com*
*[4] Associate Professor, Dept. of Psychiatry, Mahatma Gandhi Medical College & Research Institute, Sri Balaji Vidyapeeth (Deemed-to-be-University), Puducherry – 607402. drkarthick.psy@gmail.com*
*[5]Professor, Dept. of Psychiatry, All India Institute of Medical Sciences, Kalyani, West Bengal. sukanto.psy@aiimskalyani.edu.in*
*[6] Associate Professor, Dept. of Community Medicine, Mahatma Gandhi Medical College & Research Institute, Sri Balaji Vidyapeeth (Deemed-to-be-University), Puducherry – 607402 lokeshmaran.slams@gmail.com*

**KEYWORDS**
caregivers, yoga, special educators, caregiver burden, quality of life, depression, anxiety, special children.

**ABSTRACT:**

**Background:**
Children with special needs often need extra support to navigate their daily routines and educational experiences. Special educators as caregivers play a crucial role in supporting these children at school, helping them with everyday tasks and tailoring instructional methods to meet their unique needs. The additional responsibilities and the expectation to deliver high-quality education contribute to increased stress and anxiety among these educators. Compared to general educators, special educators face a particularly challenging and demanding work environment, which can negatively impact their mental health and, in turn, their physical well-being.

**Methods:**
This study employed a randomized controlled trial design. A total of 68 special educators affiliated with a special education school in Pondicherry participated, with an average age of 33.71 years (±7.46). Participants were randomly allocated to either the experimental group or the control group. The experimental group was engaged in a one-hour yoga session twice weekly for 24 weeks. Data collection included four psychological scales administered both at baseline and post-intervention and a general demographic form administered at baseline. Data were analysed using median, interquartile range (IQR), the Mann-Whitney test, and the Wilcoxon test.

**Results:**
Our findings indicated that most special educators experienced high levels of caregiver burden, sleep disturbances, depression, anxiety, stress, and a diminished quality of life, aligning with previous research. Post-test results showed a marked improvement in well-being among the experimental group, with substantial reductions in caregiver burden, sleep issues, and mental health concerns, as well as enhanced life quality, compared to the control group.

**Conclusion:**
It was concluded that yoga could help to reduce the caregiver burden and stress, enhancing the quality of life among special educators.

## INTRODUCTION

A caregiver is one who provides care for the sick, the elderly, the young and helps with the activities of another person for their daily needs and they may be aninformal one - as their immediate family (parents, siblings, grandparents) or a formal one - as their teachers or therapists(1).

Caregivers can be teachers (known as special educators)who are in the forefront as powerful resources(2) and are the backbone of any civilized society as they are the keepers of knowledge, wisdom and

values(3). Special educators provide support and education to children with one ormore special needs, adapting various methods tailored to meet each child's unique requirements(4).

Globally over 150 million children have disability according to CRIN (Child Rights Information Network). Of the total population, 35.29% are children living with disabilities in India, which estimates to around 12 million children. As per the Census 2011 the age group between 10 - 19 years has the highest number of disabled persons (approximately 46.2 lakhs) and the age group between 0 - 6 years (around 20.42 lakhs)pointing to a disheartening number that one amongst 100 children in that age group may be incapacitated(5).

Teaching can be incredibly a fulfilling occupation but at the same time it can be very stressful(4). The extra efforts as well as the pressure to provide these children with good quality education often lead to stress and anxiety in special educators(4,6,7). Research indicates that the job of the special educator is difficult, demanding, and more stressful than that of general educators (8).

**Sleep Quality Among Teachers of children with special needs**

Research indicates a high prevalence of sleep disturbances and sleep deprivation among teachers of children with special needs(7,9–11). Findings show that teachers often sleep fewer than six to seven hours per night(9,11). Sleep disturbances are significantly and positively linked to burnout, especially among female teachers, older adults, those who are divorced or widowed, individuals with higher educational levels, a personal or family history of mental disorders, chronic physical conditions, or low exercise frequency experiencing higher rates of sleep issues (9). Common sleep problems reported include, difficulty falling asleep, maintaining sleep, early morning awakenings, and poor perceived sleep quality (9–11). While teachers' sleep quality is significantly associated with daily stress levels, sleep duration does not appear to be directly related to daily stress (10).

**Caregiver burden experienced by caregivers of children with special needs**

Olagunju et al in their study indicates that a significant burden was present in the majority of caregivers, with perceived burden showing a strong correlation with psychological distress, anxiety, depression, and social dysfunction (12).

**Levels of depression anxiety and stress among the caregivers**

Special educators are shown to experience higher levels of stress and depression compared to general educators (4,7,13). The teaching profession shows a high prevalence of depression, anxiety, and stress, with factors like overcommitment, limited relaxation time, and non-teaching concerns contributing to the heightened mental health challenges among special education teachers(14).

**The quality of life among caregivers of special children**

In the study Miller found that Quality of life of the teachers of special children was lower in physical, psychological, social and environmental domains when compared to the general population(15).

Yoga, derived from the Sanskrit *YUJ* (to yoke or unite), represents the harmony of body and mind, it is described by sages as the mastery and calming of mental fluctuations (*chittavrittinirodha*)(16). Yoga has gained worldwide popularity across all age groups as a physical practice to improve flexibility, strengthen mental control as well as to enhance overall well-being. Yoga functions both as physical exercise and as an alternative therapy for individuals with physical and mental disorders.Practices such as Asana, Pranayama, and Dhyana contribute to improvements in mental and physical health (16).

Yoga therapy combines techniques from psychotherapy and physical therapy, offering an effective approach for prevention, self-care, and managing conditions like anxiety and depression.By balancing the Pancha Koshas, it promotes overall well-being, reducing stress-induced disorders and fostering a harmonious, meaningful life(17).

These caregivers often experience high levels of mental stress, which yoga therapy can help alleviate, enabling them to better manage daily responsibilities with ongoing improvements in both health and well-being. This, in turn, can enhance their effectiveness and resilience in their role as special educators.

Studies suggest that yoga is an effective intervention for alleviating depression, stress, anxiety and improving quality of sleep specifically among special educators, providing potential mental health benefits through regular practice(18–21). Yoga has been found to align the mind and body, promoting beneficial cognitive, emotional, and physiological effects by lowering the occurrence of negative thoughts and replacing maladaptive ones (18).

Given the limited research on yoga as an intervention for caregivers of special needs children, it is essential to conduct a focused study to better understand their unique challenges. This study specifically aimed to investigate the impact of yoga on secondary caregivers' mental health, sleep quality, caregiver burden, and overall quality of life. Such research could offer valuable insights into therapeutic approaches that support caregivers in managing, and coping with their circumstances.

## MATERIALS *AND METHODS*

### Study design and setting:

The research took place at a special education institution in Puducherry, following ethical approval from the Institutional Human Ethics Committee (Project No: PhD. Project/04/2019/006) of MGMCRI.

### Study participants & definitions

The participants for this study were selected from teachers at a special education school. An orientation session was conducted to explain the study's objectives and clarify the participants' roles, ensuring they had a clear understanding and could cooperate effectively. A total of 78 teachers initially expressed interest in participating. Following the completion of a general proforma, 68 teachers were chosen based on specific inclusion and exclusion criteria. Informed consent was obtained from all selected participants. The study concentrated on specific psychological variables and involved the administration of four questionnaires.

### Study Procedure

A general proforma was used to record the socio-demographic details of the participants, while four specific questionnaires were administered to collect comprehensive data on psychological variables. These included the "Caregiver Burden Scale" to assess the impact and stress experienced by caregivers, the "WHOQOL-BREF" for evaluating overall quality of life and well-being, the "DASS-21" (Depression Anxiety Stress Scales-21) to measure symptoms of depression, anxiety, and stress, and "The Pittsburgh Sleep Quality Index" to assess sleep quality and disturbances over a one-month period. The stress scores from the DASS scale were used to randomly assign subjects to the experimental and control groups. Each tool was carefully chosen to provide a thorough understanding of the psychological aspects affecting the participants.

The study focused on caregivers of children with special needs, under the age of 18, residing in Pondicherry and Tamil Nadu. Eligible participants were caregivers aged 18 to 50, identified as formal caregivers and working as teachers at a special education school. Only those with stress scores ranging from 0 to 25 (normal to moderate stress levels) were included. Both male and female caregivers were eligible, provided they gave informed consent. However, caregivers who had undergone surgery or were physically unable to participate in yoga sessions, those who were pregnant or lactating, and individuals with known or medicated psychotic disorders were excluded.

The study included caregivers of children diagnosed with various special needs, such as Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorder (ASD), Cerebral Palsy (CP), CP with Down syndrome, Down syndrome, and Intellectual Disability (ID). This diverse group represented a range of developmental and cognitive challenges faced by the children under care, aiming to offer insights across various conditions.

### Caregiver Burden Scale (22)

The caregiver burden was assessed using the standardized "Caregiver Burden Scale" developed by Zarit et al., consisting of 22 items. This scale aims to measure the emotional impact and stress related to caregiving. The first 21 items offer five response options ("Never," "Rarely," "Sometimes," "Quite frequently," and "Nearly always"), scored from 0 to 4. The final item provides a different set of responses ("Not at all," "A little," "Moderately," "Quite a bit," and "Extremely"), also scored from 0 to 4. The overall score is obtained by summing up the responses, with higher scores reflecting a higher level of burden. Total scores range from 0 to 88, categorized as "Little or no burden" (0–21) and "Mild to severe burden" (22–88).

### WHOQOL-BREF

The WHOQOL-BREF (World Health Organization Quality of Life - BREF) is a 26-item questionnaire designed to assess the overall quality of life. It focuses on four primary domains: physical health, psychological health, social relationships, and the environment. Each domain score reflects an individual's perception of their quality of life in that specific area. The scoring is positively oriented,

where lower scores indicate poorer quality of life, and higher scores suggest a better quality of life. Domain scores are calculated by averaging the scores of the items within each domain.

**DASS-21**(23)

The DASS-21 (Depression, Anxiety, and Stress Scale) is a self-reported tool designed to measure emotional states associated with depression, anxiety, and stress. The scale consists of 21 items divided into three sets of 7 items, each forming subscales with similar content. The Depression subscale assesses feelings such as hopelessness, lack of interest, self-deprecation, and dysphoria, with scores ranging from "normal" to "extremely severe." The Anxiety subscale evaluates symptoms like autonomic arousal, skeletal muscle effects, situational anxiety, and subjective anxiety experiences, with scores ranging from "normal" to "extremely severe." The Stress subscale measures traits such as irritability, impatience, nervous tension, and difficulty relaxing, similarly ranging from "normal" to "extremely severe." The DASS-21 provides a comprehensive assessment of emotional well-being across these three dimensions.

**The Pittsburgh Sleep Quality Index (PSQI)**(24)

The Pittsburgh Sleep Quality Index (PSQI) is a well-established tool for assessing sleep quality and patterns over the past month in adults. It comprises of 19 items grouped into seven components, generating an overall global score. These components evaluate specific aspects of sleep, including subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. Developed at the University of Pittsburgh, the PSQI scoring ranges from 0 to 21. Scores of 0 to 5 indicate good sleep quality, while scores above 5 suggest poor sleep quality.

The intervention for the experimental group (n = 33) involved practicing a series of yoga techniques, including a combination of chanting, postures, breathing exercises, and kriyas as shown in table 1. The session was structured as follows:

Table 1: Yoga Protocol

| S.No | Yoga Protocol | Time in mins |
|---|---|---|
| 1 | Om Chanting | 2 minutes |
| 2 | Jathis (Warm-up Exercises)<br>o Hands in and out<br>o Hands stretching up and down<br>o Setubhandasana kriya<br>o Vyagrahapranayama | 6 minutes |
| 3 | Standing Postures<br>o Tadasana<br>o Ardhakatti Chakrasana | 5 minutes |
| 4 | Vibhaha Pranayama | 5 minutes |
| 5 | Sitting Postures<br>o Vajrasana<br>o Sasangasana | 5 minutes |
| 6 | Prone and Supine Postures<br>o Bhujangasana<br>o Pawanmuktasana | 5 minutes |
| 7 | Pranayama Techniques<br>o Nadisuddhi Pranayama<br>o Sheetali Pranayama<br>o Sitkari Pranayama<br>o Bhramari Pranayama<br>o Pranava Japa | 15 minutes |
| 8 | Marmanasthanam Kriya | 15 minutes |
| 9 | Om Chanting | 2 mins |

This routine was designed to provide a comprehensive practice incorporating physical, mental, and breathing exercises to enhance overall well-being.

The control group did not engage in any yoga training during the study period. After 24 weeks of intervention, all the parameters were re-evaluated for both the experimental and control groups. The collected data was then subjected to statistical analysis to determine the effectiveness of the intervention.

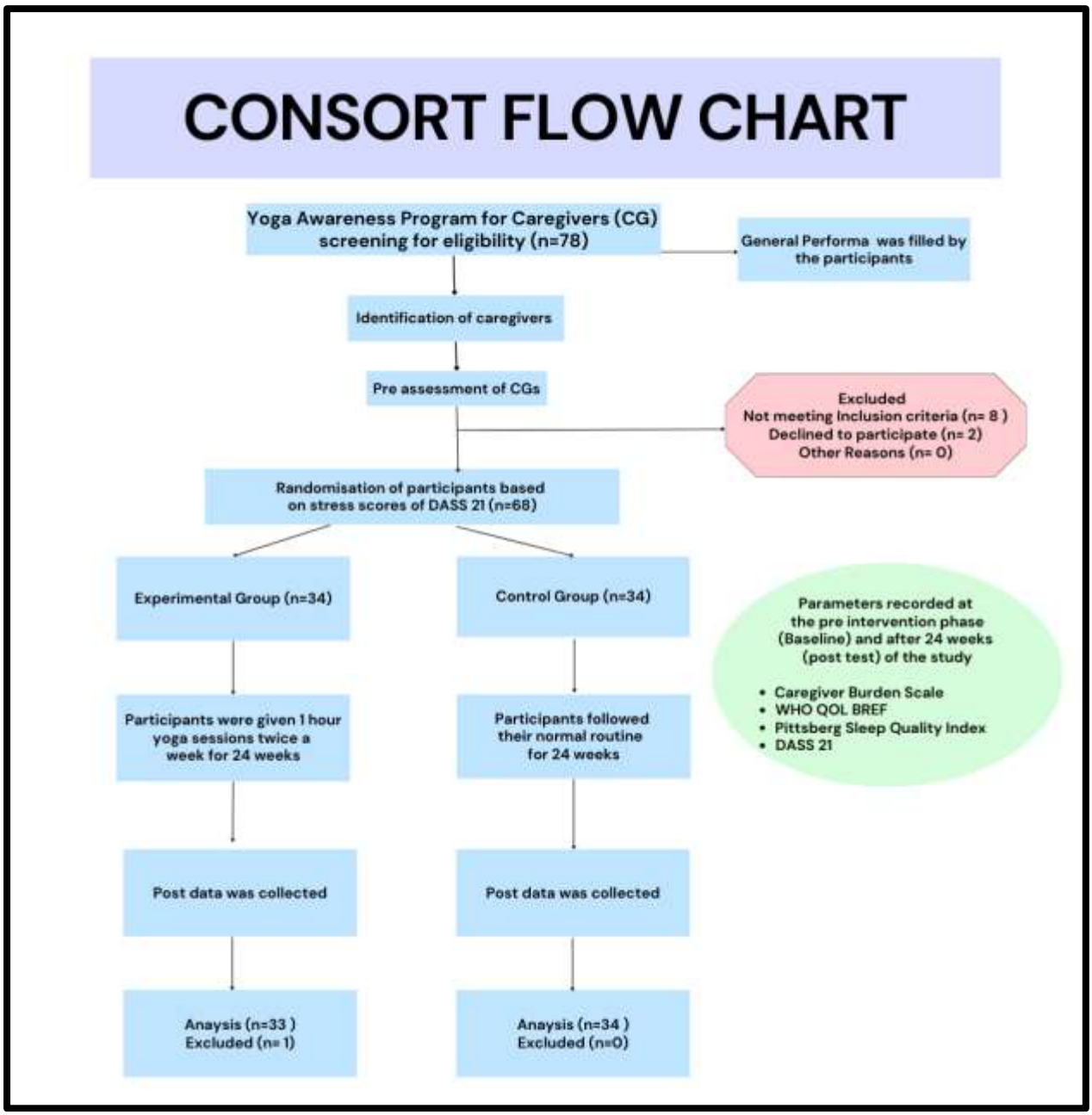


Figure 1: CONSORT flowchart depicting Participant enrolment, intervention periods and Data Analysis throughout the study.

**STATISTICAL ANALYSIS**

Data was collected andorganized through Microsoft Excel®. The data analysis was done with SPSS Statistics for Windows, Version 16.

The continuing variables are represented through Median and IQR which was not normally distributed. Mann whitney test and Wilcoxon test was used to find the significance between the two groups or two parallel values, the pvalues less than 0.05 was considered for statistical significance.

| Table 2: Socio Demographic details of caregivers (teachers) of children with special needs | | | | |
|---|---|---|---|---|
| Personnel | | Experiment n (%) | Control n (%) | Total n (%) |
| Gender | Female | 26(78.79%) | 22(64.71%) | 48(71.64%) |
| | Male | 7(21.21%) | 12(35.29%) | 19(28.36%) |
| Marital status | Single | 9(27.27%) | 8(23.53%) | 17(25.37%) |
| | Married | 24(72.73%) | 26(76.47%) | 50(74.63%) |
| Income per month | upto Rs. 15,000 | 27(81.82%) | 23(67.65%) | 50(74.63%) |
| Income per month Employment status | Rs.15,001 - Rs.25,000 | 5(15.15%) | 7(20.59%) | 12(17.91%) |
| | Rs.25,001 - Rs.50,000 | 1(3.03%) | 4(11.76%) | 5(7.46%) |
| | Employed full time | 33(100%) | 34(100%) | 67(100%) |
| Occupation | skilled | 33(100%) | 34(100%) | 67(100%) |
| Religion | Christian | 3(9.09%) | 3(8.82%) | 6(8.96%) |
| | Hindu | 28(84.85%) | 30(88.24%) | 58(86.57%) |
| | Muslim | 0 | 1(2.94%) | 1(1.5%) |
| | No comment | 2(6.06%) | 0 | 2(2.99%) |
| Family Structure | Nuclear family | 20(60.61%) | 20(58.82%) | 40(59.7%) |
| | Joint Family | 13(39.39%) | 14(41.18%) | 27(40.3%) |

| Table 3 : Details of the teachers age and years of serivce | | | |
|---|---|---|---|
| Teacher details | Group | mean± SD | p-value |
| Years of service as a teacher for children with special needs? | Exp | 6.43±4.12 | 0.3 |
| | Control | 5.59±5.03 | |
| Age of Teacher | Exp | 32.76±6.68 | 0.563 |
| | Control | 33.71±7.46 | |

A total of 68 teachers participated in the study. The mean age of the teachers was 33.24±7.05 years. The mean of the years of service was 6.01±4.59.Majority of the participants were females among the teachers (71.64%). More than half of the participants were married (74.63%). Among the teachers' all of them were Employed full time (100%).
Majority of the participants among teachers (86.57%) belonged to Hinduism. Among the teachers (59.70%) the majority were seen to belong to nuclear family structure.(Table 2&3)

Table 4 : Comparison of baseline psychological parameters amongst the groups (median/IQR)

| Parameters | | Experimental group | Control group | Mann whitney test | p-value |
|---|---|---|---|---|---|
| Levels of caregiver burden (CGBS) | | 32 (22, 42) | 30.5 (21.5, 41.75) | 558.5 | 0.98 |
| Quality of sleep (PSQI) | | 8 (6, 9) | 6 (6, 7) | 686.5 | 0.112 |
| Levels of Depression. Anxiety and Stress (DASS) | Depression | 18 (12, 20) | 14 (10.5, 16) | 693.5 | 0.094 |
| | Anxiety | 12 (8, 14) | 10 (8, 12) | 632 | 0.361 |
| | Stress | 18 (16, 22) | 18 (16, 20) | 596.5 | 0.654 |
| The quality of life (QOL- BREF) | Physical domain | 44 (38, 44) | 44 (38, 50) | 401 | 0.038 |
| | Psychological domain | 44 (44, 50) | 44 (38, 44) | 675.5 | 0.123 |
| | Social domain | 31 (25, 31) | 28 (25, 31) | 632.5 | 0.332 |
| | Environmental domain | 44 (38, 50) | 41 (38, 50) | 672 | 0.15 |

The baseline comparison of psychological parameters between the experimental and control groups, as shown in Table 4, revealed no significant differences in most measures. Levels of caregiver burden (CGBS) were similar between the groups, and no significant differences were observed in quality of sleep (PSQI) scores. For levels of depression, anxiety, and stress (DASS), there were also no significant differences at baseline across all three components. In terms of quality of life (QOL-BREF), most domains did not show significant baseline differences, including the psychological, social, and environmental domains. However, a slight significant difference was found in the physical domain, indicating some variability between the groups in this aspect at baseline. (Table 4)
Table 5 presents the analysis of changes from baseline to post-intervention within each group, indicating significant improvements across various parameters for the experimental group. In contrast, the control group exhibited less favourable outcomes.

In the **Levels of Caregiver Burden (CGBS)**, the experimental group showed a significant reduction after the intervention, while the control group exhibited an increase, indicating a worsening of caregiver burden. Regarding **Quality of Sleep (PSQI)**, the experimental group improved significantly, with better sleep quality after the intervention. In contrast, the control group showed a deterioration, with sleep quality worsening over time.

Table 5: Comparison of Quality of Sleep (PSQI), Caregiver Burden (CGBS), Depression, Anxiety, and Stress Levels (DASS), and Quality of Life (WHOQOL-BREF) score Among Caregivers of Children with Special Needs between baseline and post 24 weeks in the groups (median/IQR)

| Parameters | | Intervention timeline | Experimental group | | | Control group | | |
|---|---|---|---|---|---|---|---|---|
| | | | Median IQR | Wilcoxson signed rank test | P-value | Median IQR | Wilcoxson signed rank test | pvalue |
| Levels of caregiver burden (CGBS) | | baseline | 32 (22, 42) | 561 | < .001 | 30.5 (21.5, 41.75) | 7 | < .001 |
| | | post | 19 (9, 23) | | | 36 (28.25, 50.25) | | |
| Quality of sleep (PSQI) | | baseline | 8 (6, 9) | 561 | < .001 | 6 (6, 7) | 4 | < .001 |
| | | post | 4 (3, 5) | | | 9 (7, 10) | | |
| Levels of Depression. Anxiety and Stress (DASS) | Depress-ion | baseline | 18 (12, 20) | 561 | < .001 | 14 (10.5, 16) | 16 | < .001 |
| | | post | 12 (8, 14) | | | 15 (12.5, 18) | | |
| | Anxiety | baseline | 12 (8, 14) | 528 | < .001 | 10 (8, 12) | 0 | < .001 |
| | | post | 8 (6, 10) | | | 12 (10, 14) | | |
| | Stress | baseline | 18 (16, 22) | 561 | < .001 | 18 (16, 20) | 15 | < .001 |
| | | post | 14 (12, 16) | | | 19 (18, 22) | | |
| The quality of life (QOL-BREF) | Physical domain | baseline | 44 (38, 44) | 0 | < .001 | 44 (38, 50) | 465 | < .001 |
| | | post | 63 (56, 69) | | | 38 (38, 44) | | |
| | Psycho -logical domain | baseline | 44 (44, 50) | 2 | < .001 | 44 (38, 44) | 325 | < .001 |
| | | post | 69 (63, 69) | | | 38 (31, 38) | | |
| | Social domain | baseline | 31 (25, 31) | 0 | < .001 | 28 (25, 31) | 113.5 | < .001 |
| | | post | 56 (50, 69) | | | 25 (25, 25) | | |
| | Environ-mental domain | baseline | 44 (38, 50) | 0 | < .001 | 41 (38, 50) | 66 | 0.003 |
| | | post | 63 (56, 63) | | | 38 (31, 44) | | |

In terms of **Levels of Depression, Anxiety, and Stress (DASS)**, the experimental group saw marked improvements across all three components. Depression and anxiety scores significantly reduced after the intervention, reflecting better mental health. Stress levels also declined in the experimental group. On the

other hand, the control group experienced slight increases in depression, anxiety, and stress scores, indicating a decline in mental well-being over the same period.

The **Quality of Life (QOL-BREF)** domains showed consistent improvements in the experimental group. The physical domain scores increased, reflecting enhanced physical well-being, while the psychological health in the experimental group also improved, with scores rising significantly, when compared to the control group. Additionally, the social domain scores improved significantly in the experimental group, indicating better social well-being and finally, the environmental domain scores increased in the experimental group, highlighting better environmental satisfaction, when compared to the control group.

Overall, the experimental group demonstrated significant improvements across all parameters following the intervention, whereas the control group showed less favourable changes in the same metrics.(Table 5)

**DISCUSSION**

There were no significant differences in the baseline parameters across the groups, indicating that they were comparable for the purposes of this study. Declines in mental well-being, including increased levels of depression, anxiety, stress, poor sleep quality, heightened caregiver burden, and reduced quality of life, have been shown to negatively impact teachers' performance. After a 24-week yoga intervention, significant reductions in depression, anxiety, stress, and caregiver burden were observed, alongside notable improvements in sleep and quality of life.

**Levels of caregiver burden among the caregivers**

Our study found that the experimental group experienced a significant reduction in caregiver burden following the intervention, while the control group showed an increase, reflecting a worsening of their burden. This aligns with the findings of **Hegde et al**, where caregiver burden scores in the yoga group demonstrated a significant improvement post-intervention compared to the control group, suggesting that yoga is effective in reducing caregiver burden over time relative to controls(25).

**Levels of depression anxiety and stress among the caregivers**

In our study, the experimental group showed marked improvements across all three components—depression, anxiety, and stress. After the intervention, scores in these areas significantly decreased, 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 well-being during the same period.

These findings are consistent with prior research.Dike et al. and Miller et al. reported that psychological symptoms improved significantly in yoga groups, with stress, anxiety, and depression scores showing a marked decline between baseline and post-intervention assessments. In contrast, control group scores remained relatively unchanged (18,21). Similarly, studies by Cabrera et al. and Akanaeme et al. also observed a significant reduction in stress scores in yoga groups between baseline and post-treatment evaluations, further supporting the positive impact of yoga on mental well-being (19,20).

**Quality of Sleep of caregivers**

In their study, Khalsa et al. found that yoga led to statistically significant improvements in state and trait anxiety, depression, panic, sleep, and quality of life for participants suffering from anxiety disorders. Similarly, our study revealed that the experimental group showed significant improvements in sleep quality after the intervention. In contrast, the control group experienced a decline, with sleep quality worsening over time. These findings reinforce the growing evidence that yoga can enhance both sleep quality and overall mental well-being(26).

**Quality of life of caregivers**

In a related study by Hegde et al., the yoga group showed a significant difference at post-intervention in the physical, psychological, environmental, and social domains compared to the control group(25). Similarly, in our study, the Quality of Life (QOL-BREF) domains showed consistent improvements in the experimental group across these areas. Physical domain scores increased, reflecting enhanced physical health, while psychological health and social well-being also saw significant improvements. The environmental domain reflected greater satisfaction with surroundings. In contrast, the control group experienced declines in all these areas, showing worsened scores. These findings underscore the positive effects of yoga on the overall quality of life for participants, in line with the findings of other studies.

## STRENGTHS AND LIMITATIONS

There is a paucity of research examining stress, anxiety, depression, caregiver burden, quality of sleep, and quality of life among special educators of children with special needs in Puducherry, India. This study provides valuable insights into the mental effects of caregiving and the impact of yoga on their well-being. The inclusion of a control group highlights not only the long-term positive effects of yoga on the overall well-being of the experimental group but also the negative consequences of the lack of intervention on the mental well-being of the control group. These findings underscore the need for proper monitoring and intervention to address the psychological conditions of these caregivers.

However, the study has certain limitations. It was conducted at a single centre, and the majority of participants were female. Additionally, data on the emotional and behavioural functioning of the children were not collected, preventing correlation with the caregivers' mental health. Another limitation is that all the teachers in the study had completed a minimum of two years of service, which may have made them more aware of or better adapted to handling the behaviours and medical situations they encounter with their students.

## CONCLUSION

It can be inferred that special educators experience compromised psychological health due to the significant stress involved in supporting children with special needs, assisting with daily tasks, and adapting educational methods to suit each child. This study concludes that yoga may effectively reduce caregiver burden and stress, enhancing the quality of life for these educators. Efforts should be made to raise awareness about their health challenges and to promote yoga as a practical intervention for alleviating mental health-related issues among caregivers.

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