EFFECT OF YOGA AND CYCLIC MEDITATION ON QUALITY OF LIFE AND QUALITY OF SLEEP AMONG SECONDARY CAREGIVERS OF SPECIAL NEEDS INDIVIDUALS – A COMPARATIVE STUDY

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Abstract

Background and Objectives: The study explored the effect of Yoga and Cyclic Meditation in improvement of the Quality of Life and Sleep Quality among Secondary caregivers of special need individuals. The research was a comparative study between two groups pre-post design study with a convenient sampling, with a sample size of (n=25), one group were given yoga intervention (n=15) the other group Cyclic Meditation (n=10), participants were secondary caregivers (teachers) of special need individuals. The study used questionnaires as a subjective measure to evaluate the Quality of Life and Sleep Quality. **Methods and Materials:** 25 secondary caregivers in the age group of 25-50 yrs, who gave the written consent form, participated in the intervention, completed the study. The variables questionnaires of Quality of Life and Sleep Quality were assessed before and after the intervention. The participants underwent yoga and cyclic meditation practices for 40min for 3 days a week for 2 months follow up. The parameters were repeated after 8 weeks.

Results: A paired sample test was conducted to compare the pre-post data in both the groups. There was a significant difference in scores for pre and post intervention, and this was a significant with p=.001. This showed that yoga intervention was highly significant in improving the Quality of Life and Sleep Quality among the participants.

Introduction

Caregivers are unpaid non-professionals; they play a very vital role in the care and support of people who are suffering from chronic or psychiatric illness. They are usually family members and friends. (1) Defining caregivers has been an issue as e.g., “caregivers, “parents”, or “supporters”; this will not change their responsibility or strain on their role. Care giving situations can be differentiated according to the intensity, duties and duration of the care giving relationship. Primary care givers attend to most of the routine work e.g., house hold work, financial matters, and personal care and being responsible to most decisions, which will affect their cognitive and communicative outcome. Next are the Secondary caregivers, who are prone to high levels of psychological distress though they may not attend to the patient’s primary responsibilities. Though Secondary caregivers do not have essential responsibility of the patient care, there are at high levels of psychological distress. (2) There are results from researches which show that the strain of the caregivers is different from general stress. The behaviour of whom he cares has a profound effect on the psychological strain of the caregiver.(3) Researchers have observed direct correlation between poor sleep quality and increased physical and psychiatric morbidity, decline in cognitive function, and impaired quality of life (QOL)(4) Anxiety, depression and poor quality of life are the three major aspects of stress related disorders which are often confronted by the caregivers as per the studies. This in turn puts a lot of burden on the caregiver not only mentally but also physically thus effecting his/her routine. (5) .They are prone to face twice the levels of mental anguish. The trend of diminishing endurance to stress with the progression of age indicates a higher rate of cardiovascular ailments and death rate. (6). Caregivers have to go through mental stress, disturbances in their state of mind, decline in Qol, as their work demands extraordinary care and participation in patient’s supervision. (2). The general investigation shows there is a drop in the health conditions and increase in morbidity rate of the caregivers. With the advancement of the ailment of the patient, there seems to be a major impact on the caregivers themselves. (7)

A survey conducted by the National Alliance for Care giving\American Association of Retired Persons (NAC\ARP) found the number of informal care givers tripled from 1988 to 1996 to 44.4 million people

Special needs individuals

The term special needs can refer to a series of disabilities and diagnoses. The individuals of special needs may have been born with terminal illness, a syndrome, a deeper cognitive impairment, or serious psychiatric problems. There may be also special needs individuals, who are struggling with disabilities in learning, food allergies, developmental delays, or panic attacks. The category "individuals with special needs" is for individuals who may have difficulties which are more severe, and could last for a life time. These individuals need extra support and additional services. They need help with lots of guidance, in their social, emotional, academic and even medically. They need life time support and guidance in their day to day activities along with finances, employment, housing and social interaction. (8)

Quality of Life

The concept of Quality of Life (Qol) is of prime importance in the disability evaluation. It can be considered as a result of health care and rehabilitation or a health status and a sign of functional disability, progression of disease or regression, or a result of social circumstance and external conditions as well as subjective self analysis and psychological well being not related to external conditions. (Glozman, 1991; Murrell, 1999; Phillips, 1993). HOQOL-BREF developed by the WHO is a standardized comprehensive instrument for assessment of Qol consisting 26 items. The scale provides a measure of an individual's perception of Qol on four domains: (1) physical health (seven items), (2) psychological health (six items), (3) social relationships (three items), and (4) environmental health (eight items) .In addition, it also includes two questions for "overall QOL" and "general health" facets. The domain scores are scaled in a positive direction (i.e. higher score denote higher QOL). The range of scores is 4-20 for each domain. The internal consistency of WHOQOL-BREF ranged from 0.66 to 0.87 (Cronbach's alpha coefficient). The scale has been found to have good discriminant validity. It has good test-retest reliability and is recommended for use in health surveys and to assess the efficacy of any intervention at suitable intervals according to the need of the study. (9). Qol measurements are being used increasingly relevant in the evaluation of disease progression, treatment, and managing of musculoskeletal disorders. Qol represents a individual response to the physical, mental, and social effects of illness on daily living. Measuring QOL is important for the clinical effectiveness in recent clinical trials. (9)

Sleep quality:

The eight-item SCI (concerns about getting to sleep, remaining asleep, sleep quality, daytime personal functioning, daytime performance, duration of sleep problem, nights per week having a sleep problem and extent troubled by poor sleep) had robust internal consistency ($\alpha \geq 0.86$) and showed convergent validity with the Pittsburgh Sleep Quality Index and Insomnia Severity Index. A two-item short-form (SCI-02: nights per week having a sleep problem, extent troubled by poor sleep), derived using linear regression modelling, correlated strongly with the SCI total score ($r=0.90$). The SCI has potential as a clinical screening tool for appraising insomnia symptoms against Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria.(10)

Caregivers often face the intense sleep turmoil and commotion, especially those who provide care to the patients who are nearer to their death. Insufficient sleep causes much stress related and long lasting bodily problems. (11).Sleep is vital for physiological as well as psychological well being along with respiration and eating. The quality of sleep plays a vital role in the adequate functioning of the physical body. Sleep affects learning and memory, body weight and energy levels. There are many diseases like Diabetes mellitus, hypertension, coronary artery diseases, stroke caused due to inadequate sleep. The balances in the neuronal centres are protected during sleep. The storage of Glycogen in the brain is renewed during sleep. Disorders of sleep manifested due to medical, psychological, environmental and work reasons causes insomnia. (12)

Yoga

Originated in India, Yoga is an ancient science, which includes physical activity, instructed relaxation and introception. It includes many different practices such as asanas(physical postures), pranayama(regulated breathing),meditation and discourses on philosophical aspects of yoga. (13). Yoga being one of the oldest systems is used by the millions of people that help in self-development. Yoga practice helps in improving flexibility –enhances postures, improves slowly the weight bearing capacity for everyone. Yoga, meditation and breathing helps an individual to listen to his body, increasing the flexibility, release stress, handle challenges, improving concentration and lead a life of joy. Yoga helps in balancing the mind, body and spirit. (14).Yoga elevates brain neuro -transmitter like gamma-amino butyric acid that may help treat depression and anxiety. Stress being one of the major reasons for the cause of depression. Yoga has been found to be very effective in the management of stress. Yoga is very easy to implement and also cost effective and helps in treating depression. It is very beneficial emotionally, physically and has biological effects. Yoga enhances the mood and there by helps in coping stress. (5). There are research papers which show the benefits of yoga like reduction in blood pressure, decrease in sleep disturbances, relieving anxiety and also improvement in serum lipid profile. Yoga is a non-pharmological intervention. In one of the papers studied by Manjunath and Telles in an randomized trial

that after regular yoga practice for a period of 6 months there was an improvement in the reduction in time to fall asleep, decrease in sleep disturbance during night time, better sleep quality, reduction in usage of medicines when compared to control group. One more paper by Chen and Tseng, results showed improvement in different aspects of sleep and also decrease in depressive symptoms due to yoga practices. (4)Yoga is widely accepted as achievable activity to engage individuals who are not active physically and lead sedentary lifestyle. It is a very adaptable form of activity for individuals with mental disability, as it needs minimum training and capital. According to the research conducted yoga helps in improving health and functionality of an individual. Yoga promotes physical conditioning, balance, muscle endurance and flexibility. It also improves Intelligent Quotient, communication skills.). (15). Hatha yoga is one of the forms of physical activity. Research shows that it may help in improving the health of caregivers. (16)

Cyclic meditation

Based on this a technique of 'moving meditation', a practice of yoga postures with guided meditation was evolved, called Cyclic meditation(CM), by H.R. Nagendra, Phd.D., which has its origin in an ancient Indian text, Mandukya Upanishad .(17). It is interesting to note that CM induces a quite state of mind, which is compatible with the description of meditation, namely, dhyana or effortless expansion, according to Patanjali. The description states "Tatra pratyayaikatanata dhyanam" (Patanjali's Yoga Sutras, Chapter 3: Verse 2). This means that an uninterrupted flow of the mind toward the object chosen for meditation is dhyana (17). Indeed, all meditations irrespective of the strategies involved are believed to reach this state. There are several strategies in meditation which include breath awareness, awareness of internal sensations, directing the attention to *a mantra* or a *koan*, and keeping the eyes open with the gaze fixed on the object of meditation.(17). The verse on which CM is based states: "in a state of mental inactivity awaken the mind; when agitated, calm it down; between these two states realize the possible abilities of the mind. If the mind has reached states of perfect equilibrium do not disturb it again." The underlying idea is that, for most persons, the mental state is routinely between the extremes of being "inactive" or of being "agitated" and hence to reach a balanced and relaxed state; the most suitable technique would be one which combines "awakening" and "calming" practices like that of CM.(Mandukya Upanishad 3-44). In day to day life we relax deeply, though unconsciously, by stretching and relaxing through yawning. In Cyclic Meditation, we stretch consciously and systemically, and then relax using standing postures like Pada hasthaasana, Ardhakati chakrasana, and siiting asanas like Shashanka asana ans Ushtrasana. This provides stimulation at muscular level. The process begins with Tadasana that helps us to centre our body. All the postures are performed with a slow speed maintain awareness. Apart from muscular stimulation in CM, we use sound (chanting Akara, Ukara, Mkara and Omkara) and visual (attuning to vast ocean) stimulation as well to go to deeper silence.

Meditation has been shown to reduce stress and increase feelings of peace and calm. This suggests several applications and possible benefits related to practicing meditation. One of them is possibly an improvement in sleep. This assumption may be made based on the fact that real-world stress influences cardio respiratory functions during sleep, hence influencing the restorative function of sleep. In keeping with this, meditation techniques have been found to improve the quality of sleep, though this was chiefly based on subjective measures (patra, telles 2009)

Secondary caregivers (teachers) play a vital role in special needs individual's lives for they spend more time with them, next to their parents. No research has been done on them. They face equivalent stress when compared to the informal caregivers. This present study gives a lot of scope to study the Quality of Life and Sleep Quality among them.

Materials and methods

The aim of the present study is to know the effect of yoga and cyclic meditation on the stress levels among secondary care givers of special needs individuals. Subjects were selected from a special school, age group from 25 to 50 years (m=Male and Feale) Ishanya India foundation and Aruna chetana schools both being schools for special individuals Bangalore. The study was conducted between September and November 2018. The participants were assessed at the baseline and at the end of the study after 8weeks.It was a convenient sample. A comparative study between two groups a Pre-Post design was selected for the study. No previous research was conducted on Secondary care givers. A comparative study between two groups a Pre-Post design. Yoga intervention was given for 8 weeks, 2 days a week. Yoga intervention for a group (n=14) and Cyclic Meditation (n=10).

Inclusion criteria

- Secondary care givers age between 25 to 50 years.
- Secondary care givers who consented to participate in yoga intervention.

Exclusion criteria

- Secondary care givers who were not willing to participate in yoga sessions.
- Secondary care givers who were unable to attend yoga intervention classes before and after school hours.

Assessment tools

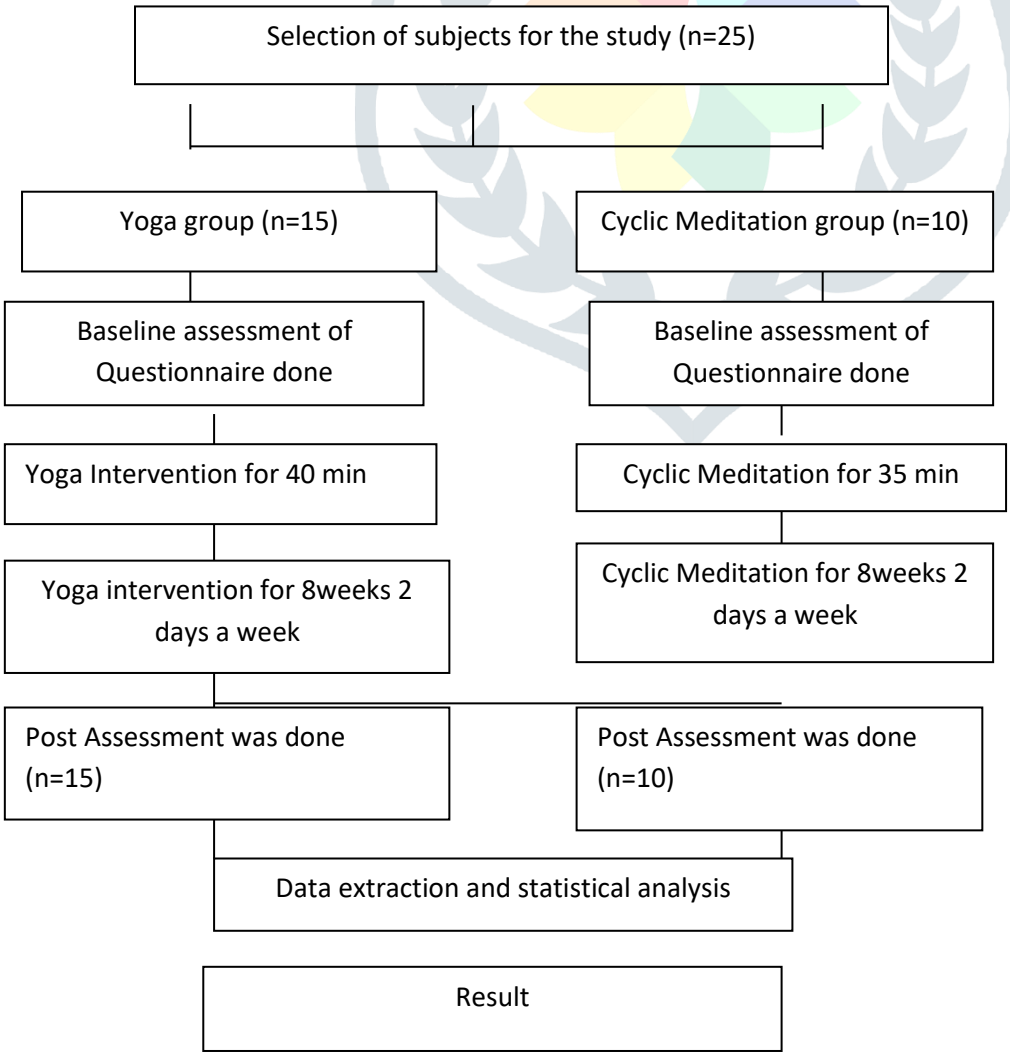
The WHOQOL-BREF is a 26-item version of the WHOQOL-100 assessment. Analyses of internal consistency, item–total correlations, discriminate validity and construct validity through confirmatory factor analysis, indicate that the WHOQOL-BREF has well to excellent psychometric properties of reliability and performs well in preliminary tests of validity. Quality of sleep is an eight-item scale was developed based on DSM-5 workgroup draft criteria that were available at the time (in 2010).[7 8] At that stage, a consultation process was underway and draft information was posted on the American Psychiatric Association website. Consequently, the SCI items generated comprised two quantitative items on sleep continuity (item 1, getting to sleep; item 2, remaining asleep), two qualitative items on sleep satisfaction/dissatisfaction (item 4, sleep quality; item 7, troubled or not), two quantitative items on severity (item 3, nights per week; item 8, duration of problem) and two qualitative items on attributed daytime consequences of poor sleep (item 5, effects on mood, energy or relationships (personal functioning); item 6, effects on concentration, productivity or ability to stay awake (daytime performance)).(10)

Procedure

Yoga intervention was conducted from two validated yoga modules for Promotion of Positive Health (PPH) and Cyclic Meditation developed by S-vyasa Yoga University. The PPH module included practices such as sukshma vyayama, breathing practices, asanas, surya namaskara and pranayama. Cyclic Meditation, 8 steps methods of S-vyasa.

Data Analysis

A total of 25 secondary care givers were enrolled into the study and data was collected before and after yoga/cyclic meditation intervention using Quality of Life (WHOQOL)-BREF and Sleep Quality self scaled instruments. The participants were assessed at the baseline and at the end of the study after 8weeks. Written informed consent was taken from all participants before enrolment into the study. Data was analysed using SPSS version 20.0 (IBM SPSS data analysis, New York, United States). The data was checked for normal distribution using the Shapiro-Wilk test. Wilcoxcon signed rank test was applied to find the difference in the pre-post study and ascertain the significance of the study. The pre and post scores of $p<0.01$ were considered statistically significant.



Results

A paired sample t-test was conducted to analyse the data collected to compare the stress levels of the participants before and after the yoga intervention.

There was significant difference in the QOL scores for Physical Health, Post- yoga (M=70.13, SD=7.71) and Pre-yoga (M=54.53, SD=8.25), with 28.6% increase in mean, p=0.001. Psychological domain Post-yoga (M= 71.8, SD=5.49), and Pre- yoga (M=53.4, SD=7.39), with 34.45% increase in mean, p=0.001.Social relationships Post yoga (M=80.8, SD=12.64), and Pre –Yoga (M= 52.4, SD= 24.07), with 54.19% increase in mean, p=0.001. Environmental Domain, Post Yoga (M= 77.87, SD= 8), and Pre yoga (M= 61.3, SD=12.29), with 27.38% increase in mean, p=0.001. There was significant difference in all the domains, where as the Social Relationships domain showed highest amongst all with 54.19%.

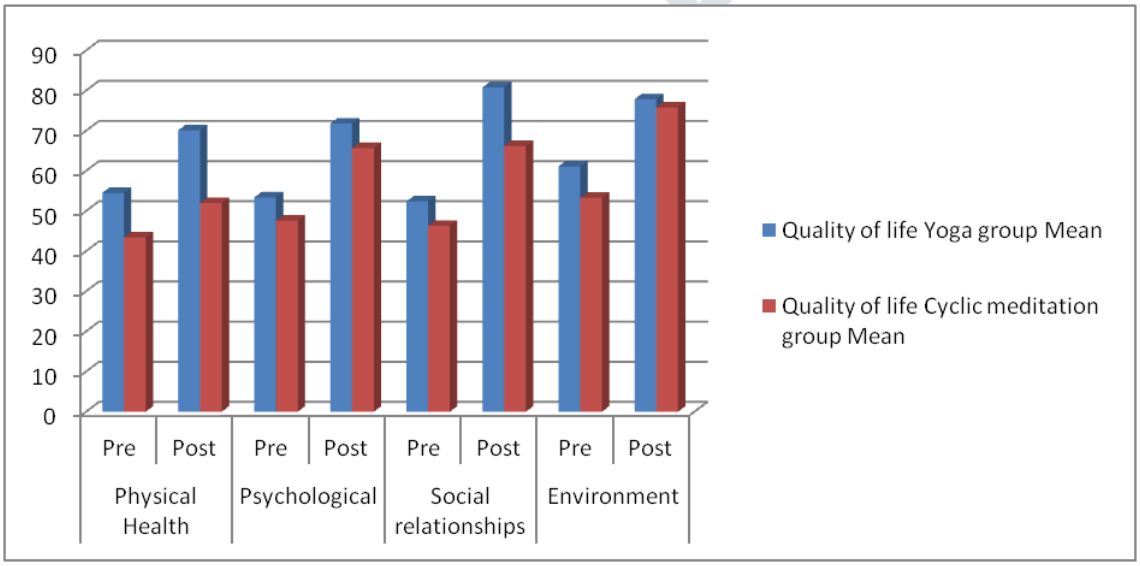
Domain	**Physical Health**		**Psychological**		**Social relationships**		**Environment**	
	Pre	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
Mean	54.53	70.13	53.4	71.8	52.4	80.8	61.13	77.87
Standard deviation	± 8.25	± 7.71	± 7.39	± 5.49	± 24.07	± 12.64	± 12.29	± 8
Standard Error	2.13	1.99	1.19	1.42	6.21	3.26	3.17	2.07
Mean % Change	28.6%		34.45%		54.19%		27.38%	
P value	0.001		0.001		0.001		0.001	

Table 1: Comparison of pre and post data for Quality of life of Yoga group

The results showed significant difference in the QOL scores of Cyclic Meditation (CM) for Physical Health, Post –Yoga ((M=52, SD= 9.79), and Pre-yoga (M=43.4, SD=5.97), with 19.8% increase in mean, p=.001. psychological domain, Post yoga (M=71.8, SD=5.49), and Pre-yoga (M=53.4, SD=7.39), with an 34.35% increase in mean, p=0.001. Social relationships Domain, Post yoga (M=80.0, SD=12.64), and Pre-yoga (M=52.4, SD=24.07), with 54.19% increase in mean, p=0.001. Environmental Domain, Post yoga (M=77.87,SD=8), and Pre yoga (M= 61.13, SD=12.29), with an 27.38% increase in mean ,p=0.001. The result showed significant difference in all domains, where as the social relationships domain showed highest amongst all of 42.98%.

Domain	**Physical Health**		**Psychological**		**Social relationships**		**Environment**	
	Pre	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
Mean	43.4	52	47.6	65.7	46.3	66.2	53.3	75.8
Standard deviation	± 5.97	± 9.79	± 5.79	± 10.27	± 17.31	± 12.53	± 11.08	± 14.36
Standard error	1.89	3.09	1.83	3.24	5.47	3.96	3.5	4.54
Mean % Change	19.8%		38.02%		42.98%		42.21%	
P value	0.034		0.008		0		0.005	

Table 2: Comparison of pre and post data for Quality of life of Cyclic meditation group



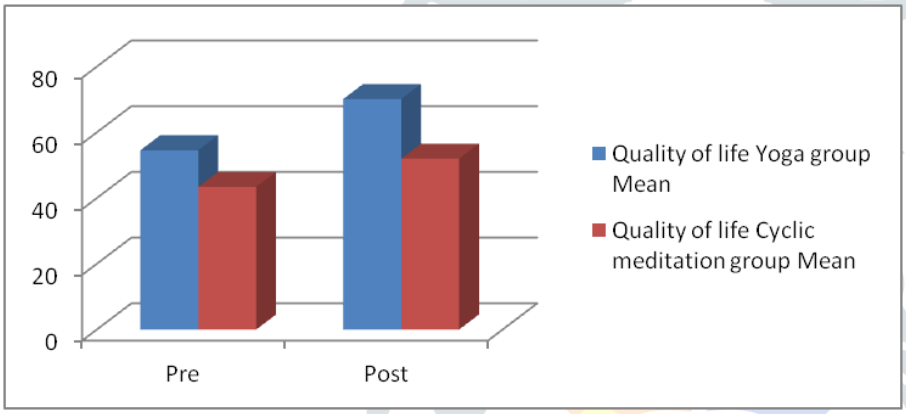
	Mean	Standard deviation	Standard error	Mean % change	P value
Pre	19.2	± 3.32	0.86	56.92%	0.000
Post	30.13	± 3.85	0.99		

Table 3: Comparison of pre and post data for Quality of sleep of yoga group

Yoga group showed 56.92% increase in mean, with p=0.000 which showed high significance.
The group where CM was given as intervention showed a 41.04% increase in mean value, with p=0.000 which was highly significant. Comparing Sleep Quality in both the groups' yoga group showed 56.92% mean difference where as the CM group showed 41.04% mean difference, this shows that yoga is more effective than CM on the participants.

	Mean	Standard deviation	Standard error	Mean % change	P value
Pre	17.3	± 3.02	0.96	41.04%	0.000
Post	24.4	± 3.66	1.16		

Table 4: Comparison of pre and post data for Quality of sleep of cyclic meditation group



Discussion

In one of the study conducted on 60 caregivers of inpatients of neurology for 1 month showed improvement in anxiety and depression levels and also in Quality of life. Pre-to post-test comparisons in the study revealed statistically significant reduction in anxiety and depression and improved quality-of-life in the yoga group as compared with the control group (P<0.001) (18). Another study done on effect of CM on stress among caregivers of individuals with Development disabilities, (n-40) there was significant reduction of subjective stress & anxiety levels with no objective improvement (Sudha, 2018) (20). In a study conducted on 60 elderly people who were given yoga intervention, Yoga group participants had significantly less sleep disturbances (P < 0.0001), shorter sleep latency, and decreased use of sleep medications (P < 0.05). Yoga exercises improved joint flexibility, prevented decline in the physical function, and improved QOL of elderly people. Further one more study conducted amongst advanced lung cancer patients and their caregivers where Yoga was given as the intervention; the lung cancer patients showed a significant reduction in anxiety and an increase in mental health domain of QOL with medium effect sizes in benefit finding and small effect sizes in sleep disturbance and spiritual well-being; the caregivers showed a significant reduction in sleep disturbance and a medium effect size for physical health domain of QOL. As patient's QOL typically deteriorated across 6 weeks of radiotherapy, post yoga intervention there was a significant improvement in the patients QOL..(19) Meditation has been shown to reduce stress and increase feelings of peace and calm. One of them is possibly an improvement in sleep. This assumption may be based on the fact that real-world stress influences cardio respiratory functions during sleep, hence influencing the restorative function of sleep. In keeping with this, meditation techniques have been found to improve the quality of sleep, though this was chiefly based on subjective measures (patra&telles,med sci monit 2009),(21)

The present study looked at the effect of Yoga intervention and Cyclic Meditation on improving the Quality of Life and Sleep Quality among the Secondary caregivers of special needs individuals. This study showed significant improvement in Quality of Life and Sleep quality, where one group was given yoga and the other CM. The result shows that there was significant improvement in all the 4 Domains be it physical, psychological, social relationship and environmental Domains. Studies have been conducted previously amongst caregivers where yoga has been given as an intervention, whilst no research has been conducted to focus on the wellbeing of secondary caregivers in specific. The yoga and the CM groups both showed an increase in the percentage of mean (M=54.19%,M= 42.98%),this shows in both the groups the Social relationships domain had a more significant results than the other three domains. The result of this current study suggests that this intervention of Yoga and CM significantly improved Sleep Quality and physical, psychological, social and environmental domains of Quality of Life amongst the secondary caregivers of special needs individuals and increased their efficiency at work and personal life helping them in providing proficient care to special needs individuals.

Future studies can include longer follow up periods and strategies to help prolong the observed beneficial effects, which may

include placing a greater emphasis on practice between sessions for participants.
After 8 weeks of yoga intervention, there was subjective improvement in Quality of life and sleep quality where the patients felt more relaxed and peaceful. The participants exhibited delight to pursue Yoga in the future; where they also requested to be provided with a follow-up chart for their personal *sadhana* (practice).

Conclusion

The present study reveals that mind body therapies such as yoga positively facilitate mental health and well being among the secondary caregivers. Further, this study provides evidence that yoga is feasible, acceptable and enjoyable therapy for the participants. In addition, there was significant improvement in the Quality of Life and sleep quality levels can be attributed to the adaption of CM and Yoga.
Why Mind-Body Techniques Help Caregivers? Yoga is helpful for all people; it can have special benefits for caregivers. The job of the caregivers requires them to be physically strong and also emotional in order to face the challenges and changes in their day to day life. They need to build their own tolerance as they work with individuals, who are scared or suffering, spiritual and emotional flexibility to face situations. Through the practice of mind body and spiritual techniques, it helps in improving the total well being of the caregivers which in turn have a positive effect on the care of the special individuals. This 8week study for 2 days a week of Yoga and CM has shown significant results in quality of life and sleep quality among secondary caregivers. Further studies conducted for longer period using different parameters could give even more significant results, as there are no researches conducted on secondary caregiver's population.

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