

A Comparative Study of the Effects of Yoga, Naturopathy, and Conventional Medical Treatment in Managing Low Back Pain

Dr. Sindhu S¹, Dr. Karthick S², Dr. Selvakumar K^{3*}, Dr. Shivaprasad.K.⁴, Dr. Sridevi.S.⁵

¹Scientist, Madras Diabetes Research Foundation, Chennai, Tamil Nadu, India

²Associate Professor, Kongu Naturopathy and Yoga Medical college and Hospital, Erode, Tamil Nadu, India

³Associate Professor, Sivaraj Naturopathy and Yoga Medical college and Hospital, Salem, Tamil Nadu, India

⁴Dean, Division of Yoga & Physical Therapeutics., SDM College of Naturopathy & Yogic Sciences Dakshina Kannada, Karnataka, India

⁵Shree Ramana Energy Medicine Clinic, Arumbakkam, Chennai, Tamil Nadu, India

DOI: [10.36347/sjams.2023.v11i08.010](https://doi.org/10.36347/sjams.2023.v11i08.010)

| Received: 05.07.2023 | Accepted: 08.08.2023 | Published: 11.08.2023

*Corresponding author: Dr. Selvakumar K

Associate Professor, Sivaraj Naturopathy and Yoga Medical college and Hospital, Salem, Tamil Nadu, India

Abstract

Original Research Article

Yoga, regarded as an art, science, and philosophy, encompasses various dimensions of human existence, including the physical, mental, and spiritual realms. Its potential for enhancing life's purpose and nobility is noteworthy. Patient expectations in the context of treatment outcomes, particularly for Complementary and Alternative Medicine (CAM) therapies, remain inadequately explored. This study aims to compare the effectiveness of three distinct interventions—Yoga, Naturopathy, and Conventional medical management—in alleviating pain, reducing disability, enhancing spinal mobility, and improving the quality of life in individuals with low back pain. Ninety participants were recruited based on the inclusion and exclusion criteria and randomly divided into three groups. The first group (group 1) received Yoga intervention, the second group (group 2) received Naturopathy treatments, and the third group served as the control (conventional medications). Visual Analogue Scale (VAS) scores, Oswestry Disability Index (ODI), Flexion Test-Finger to Floor Test (FTFT) results, and Quality of Life (QOL) were assessed at baseline and after a 10-day intervention period for all groups. Overall comparisons between the groups, utilizing ANOVA, revealed marked differences in pain severity, disability index, daily functional capacity, and Quality of Life (QoL) improvements following respective interventions. Substantial improvements were also noted within the yoga and naturopathic medicine groups across multiple variables.

Keywords: Low Back Pain, Naturopathy, Yoga, Visual Analogue Scale, Pain Intensity, Disability, Quality of Life.

Copyright © 2023 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Yoga, an intricate amalgamation of art, science, and philosophy, transcends mere physical exercise to encompass a holistic approach that touches upon the physical, mental, and spiritual aspects of human existence [1, 2]. Its transformative potential in fostering a sense of purpose, inner nobility, and holistic well-being has garnered global attention. In the landscape of healthcare, particularly within the realm of Complementary and Alternative Medicine (CAM) therapies, Yoga and naturopathy stands as a beacon of holistic healing [3]. Yet, amid the growing popularity of Yoga and naturopathy and other CAM modalities, an essential facet remains enigmatic—the intricate interplay between patient expectations and treatment outcomes [3].

Despite an expanding body of research exploring the effectiveness of various CAM therapies, including Yoga, and naturopathy in managing health conditions, the underlying mechanisms and nuances that govern patient responses to these interventions remain less explored [4]. In this context, patient expectations, shaped by cultural beliefs, prior experiences, and personal perspectives, play a pivotal yet often underestimated role in influencing treatment outcomes. The exploration of how patient expectations intersect with the outcomes of Yoga and naturopathy interventions can offer novel insights into the broader domain of pain management and holistic healing [5].

Low back pain, a prevalent and debilitating condition, serves as an ideal canvas for such exploration. While conventional medical approaches have demonstrated effectiveness, the rising popularity

of Yoga and Naturopathy as alternative therapies for managing low back pain warrants a rigorous investigation [6]. The distinct approaches of Yoga and Naturopathy, which emphasize mind-body integration, holistic wellness, and natural healing, prompt a need to comprehensively compare their impacts against conventional medical interventions.

In light of these considerations, this study endeavors to illuminate the intricate relationship between patient expectations, treatment outcomes, and the diverse modalities of pain management. By juxtaposing the effects of Yoga, Naturopathy, and Conventional medical treatment on low back pain, we aspire to unravel the underlying dynamics that contribute to pain alleviation, improved functionality, and enhanced quality of life.

Within the framework of this study, we posit that the interventions of Yoga, Naturopathy, and Conventional medical treatment will individually exhibit significant improvements in pain perception, reduction in disability, enhancement of spinal mobility, and elevation of overall Quality of Life (QoL) among individuals suffering from low back pain.

METHODS

Study Design:

This study employed a prospective, randomized controlled trial design to assess and compare the effects of Yoga, Naturopathy, and Conventional Medical Treatment in managing low back pain.

Study Participants:

Ninety participants aged between 18 and 45 years were recruited for the study. Participants were selected from the Outpatient unit at SDM College of Naturopathy & Yogic Sciences, Ujire (Yoga Group), Government Nature Cure Centre, Puttur, Karnataka (Naturopathy Group), and S.D.M Medical College, Dharward (Conventional Medicine Group). Informed consent was obtained from each participant.

Inclusion and Exclusion Criteria:

Inclusion criteria encompassed participants of both genders within the specified age range, presenting localized low back pain. Exclusion criteria included individuals with trauma, spinal fractures, joint instability, inflammatory joint diseases, malignancies, infections like TB, neurological deficits, pregnancy, and menstruation.

Randomization and Group Allocation:

Eligible participants were randomly allocated into three groups: Group 1 (Yoga), Group 2 (Naturopathy), and Group 3 (Conventional Medicine) using a computer-generated randomization sequence. Allocation concealment was ensured by sealed envelopes containing group assignments.

INTERVENTIONS:

Yoga Group:

Participants in the Yoga Group underwent a specifically designed integrated approach of Yoga therapy (IAYT) for back pain, incorporating relaxation techniques, spinal movements, breathing exercises, pranayama, and deep relaxation techniques. The intervention was conducted by qualified yoga instructors at SDM College of Naturopathy and Yogic Sciences.

Naturopathy Group:

Participants in the Naturopathy Group received neutral spinal baths and partial massages. The spinal bath was administered at Government Yoga & Nature Cure Out Patient Center, Puttur, and massages were performed by trained naturopathy therapists.

Conventional Medicine Group:

Participants in the Conventional Medicine Group received standard medical treatments for low back pain as recommended by orthopedic physicians from S.D.M Medical College, Dharward.

OUTCOME MEASURES:

Visual Analogue Scale (VAS) for Pain Intensity:

The Visual Analogue Scale (VAS) is a validated tool used to assess the intensity of pain experienced by participants. It consists of a horizontal line of 10 centimeters, where one end represents "No Pain" and the other end signifies "Worst Possible Pain." Participants were asked to mark a point on the line that corresponds to their perceived level of pain. The distance from the "No Pain" end to the marked point is measured and recorded as the VAS score. This provides a quantifiable measure of pain intensity, enabling a comparison of pain levels between groups and over time [7].

OSWESTRY DISABILITY INDEX (ODI):

The Oswestry Disability Index (ODI) is a well-established questionnaire designed to evaluate the impact of back pain on a participant's daily life and functional capacity. It comprises ten items that assess various aspects of physical functioning, including walking, standing, and social activities. Each item is scored on a scale of 0 to 5, with higher scores indicating greater disability. The total score is converted to a percentage disability, categorizing participants into levels of disability severity. ODI provides valuable insights into the extent of functional impairment caused by low back pain and aids in monitoring changes over the course of interventions [8].

Test-Finger to Floor Test (FTFT):

The Flexion Test-Finger to Floor Test (FTFT) measures the flexibility of the spine and hamstrings. Participants stand upright with their feet together and attempt to touch their fingertips to the floor while keeping their legs straight. The vertical distance between the fingertips and the floor is measured and

recorded in centimeters. A lower measurement suggests better flexibility, indicating an improvement in spinal mobility. FTFT is an indicator of the range of motion of the spine and provides insights into the physical impact of interventions on participants' flexibility[9].

Short Form 36 (SF36) Health Survey:

The Short Form 36 (SF36) is a widely used health survey that assesses participants' overall quality of life and well-being across various dimensions. It consists of 36 questions that encompass eight health concepts, including physical functioning, bodily pain, social functioning, and mental health. Scores from each concept are aggregated to generate two composite scores: the Physical Component Summary (PCS) and the Mental Component Summary (MCS). The SF36 captures participants' perceptions of their health status, enabling a comprehensive evaluation of the holistic impact of interventions on their quality of life [10].

DATA COLLECTION AND ANALYSIS:

Data collection involved trained assessors administering the outcome measures at baseline and after the 10-day intervention period. Descriptive statistics summarized the characteristics of the study participants. Continuous variables were presented using means and standard deviations or medians with interquartile ranges, while categorical variables were expressed as frequencies and percentages. Between-group comparisons were conducted using analysis of variance (ANOVA) with post-hoc analyses to identify significant differences. A significance level of $p < 0.01$ was used to determine statistical significance, ensuring robust findings in the evaluation of intervention effects.

RESULTS

Participant Characteristics

Ninety participants, consisting of 48 males and 42 females, with ages ranging from 18 to 45 years, were enrolled in the study. Participants were selected through routine medical check-ups, ensuring that they met the diagnostic criteria for low back pain. The three groups—Yoga, Naturopathy, and Conventional Medical—were comparable in terms of age, gender distribution, and baseline characteristics (Table: 1).

Visual Analogue Scale (VAS) Scores:

The Visual Analogue Scale (VAS) scores for pain intensity exhibited substantial variations across the three groups ($p < 0.001$). Following the 10-day intervention period, the Yoga group demonstrated a significant reduction in pain intensity, with a mean VAS score decrease of [5.60 to 2.93]. Similarly, the Naturopathy group displayed a notable decrease in pain intensity, reflected in a mean VAS score reduction of [6.53 to 3.44]. In contrast, the Conventional Medical group also experienced a reduction in pain intensity, with a mean VAS score decrease of [6.70 to 5.98]. These findings suggest that all three interventions

contributed to a reduction in pain perception among low back pain patients (Table 2; Figure 1).

Oswestry Disability Index (ODI):

The Oswestry Disability Index (ODI) scores indicated the impact of low back pain on participants' functional capacity and daily activities. Baseline ODI scores were comparable across the groups. After the 10-day intervention, the Yoga group displayed a significant improvement in disability, with a mean ODI score decrease of [19.11 to 10.90]. Similarly, the Naturopathy group exhibited a considerable reduction in disability, as indicated by a mean ODI score decrease of [15.51 to 12.78]. The Conventional Medical group also showed improvements, with a mean ODI score decrease of [18.86 to 15.62]. These findings underscore the effectiveness of all three interventions in enhancing participants' ability to perform daily tasks and manage functional limitations associated with low back pain (Table 3; Figure 2).

Flexion Test-Finger to Floor Test (FTFT):

The Flexion Test-Finger to Floor Test (FTFT) measurements provided insights into participants' spinal mobility and flexibility. Baseline FTFT measurements were similar among the groups (Table: 4). After the 10-day intervention, the Yoga group demonstrated a significant improvement in spinal flexibility, with a mean increase of [5.53 to 8.83]. Likewise, the Naturopathy group exhibited enhanced spinal mobility, reflected in a mean increase of [15.5 to 27.86]. The Conventional Medical group also displayed improvements, with a mean increase of [14.11 to 15.83]. These results suggest that all three interventions contributed to increased spinal mobility, potentially leading to improved range of motion and reduced stiffness among participants.

Quality of Life (QOL) Assessments (SF36):

Quality of life assessments using the Short Form 36 (SF36) Health Survey provided a comprehensive understanding of participants' well-being across various domains. Baseline SF36 scores were comparable between the groups. Following the 10-day intervention, significant improvements in overall quality of life were observed in all three groups, as indicated by higher scores in physical functioning, bodily pain, social functioning, and mental health dimensions. The Yoga group demonstrated substantial enhancements in both Physical Component Summary (PCS) and Mental Component Summary (MCS) scores. Similarly, the Naturopathy group exhibited noteworthy improvements in PCS and MCS scores. The Conventional Medical group also showed slight improved PCS and MCS scores. These findings highlight the positive impact of all interventions on participants' overall quality of life, encompassing both physical and mental well-being.

Adverse Events:

No significant adverse events or complications were reported among participants in any of the three

groups during the study period, ensuring the safety and well-being of participants undergoing the interventions.

Table 1: Baseline characteristics of the study participants

Variables	Yoga group	Naturopathy group	Conventional Medicine group
Age	29.65±4.56	28.55±7.82	31.58±6.89
Sex	14/15	13/17	16/14
BMI	26.45±3.32	29.65±4.40	27.89±5.54

Table 2: Descriptive Statistics for Yoga, Naturopathy and Medicine on Visual Analogue Scale (VAS).

VAS	PRE		POST		Student t test	
	MEAN	SD	MEAN	SD	T-Value	P-value
YOGA	5.66	1.32	2.93	1.40	11.704	.000*
NATUROPATHY	6.53	2.04	3.46	1.77	10.121	.000*
MEDICINE	6.70	1.8	5.98	2.04	3.426	.002*

*p<0.001 VAS= visual analogue scale

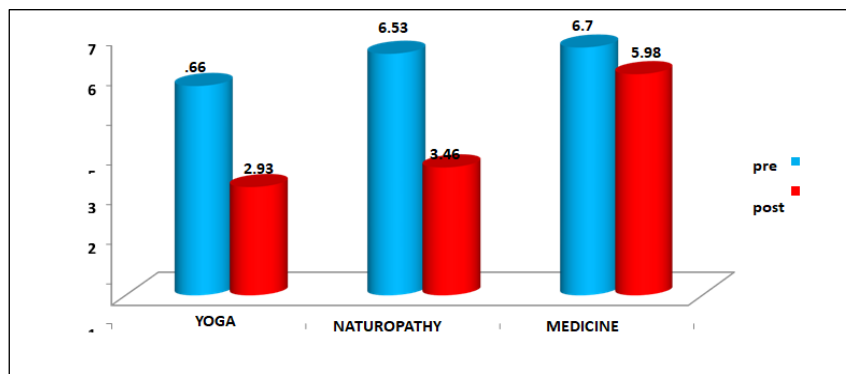


Figure 1: Represents mean of Yoga, Naturopathy and Medicine group for VAS

Table 3: Descriptive Statistics for Yoga Group on Oswestry Disability Index

YOGA GROUP	PRE		POST		Student t test	
	MEAN	SD	MEAN	SD	T-Value	P-value
Pain intensity	1.50	1.4	.866	.62	2.61	0.014*
Personal care	.96	.61	.53	1.27	2.28	0.030*
Lifting	1.53	1.27	.766	.93	2.88	0.007*
Walking	1.2	1.3	.53	.62	2.61	0.014*
Sitting	1.46	1.13	.833	1.05	3.73	0.001*
Standing	1.73	1.38	.866	.97	3.43	0.002*
Sleeping	1.13	1.35	.200	.550	3.97	0.000*
Social life	1.16	1.68	.300	.53	2.94	0.006*
Travelling	1.23	1.13	.667	1.06	2.16	0.038*

*P<.001

Table 4: Descriptive Statistics for naturopathy group on Oswestry Disability Index

Naturopathy Group	PRE		POST		STUDENT T TEST	
	Mean	SD	Mean	SD	T-value	P-value
Pain intensity	1.866	1.19	.53	.68	6.32	.000*
Personal care	.566	.626	.066	.253	4.014	0.00*
Lifting	1.800	1.44	.900	.844	2.919	0.007*
Walking	1.33	1.34	1.06	1.01	1.137	0.265
Sitting	2.33	1.24	1.96	.964	1.690	0.102
Standing	2.73	1.20	1.966	1.37	3.699	0.001*
Sleeping	1.166	1.23	.166	.379	5.058	.000*
Social life	.900	1.18	.033	.182	3.877	0.001*
Travelling	2.36	1.65	1.33	1.154	3.307	0.003*

*P<.001

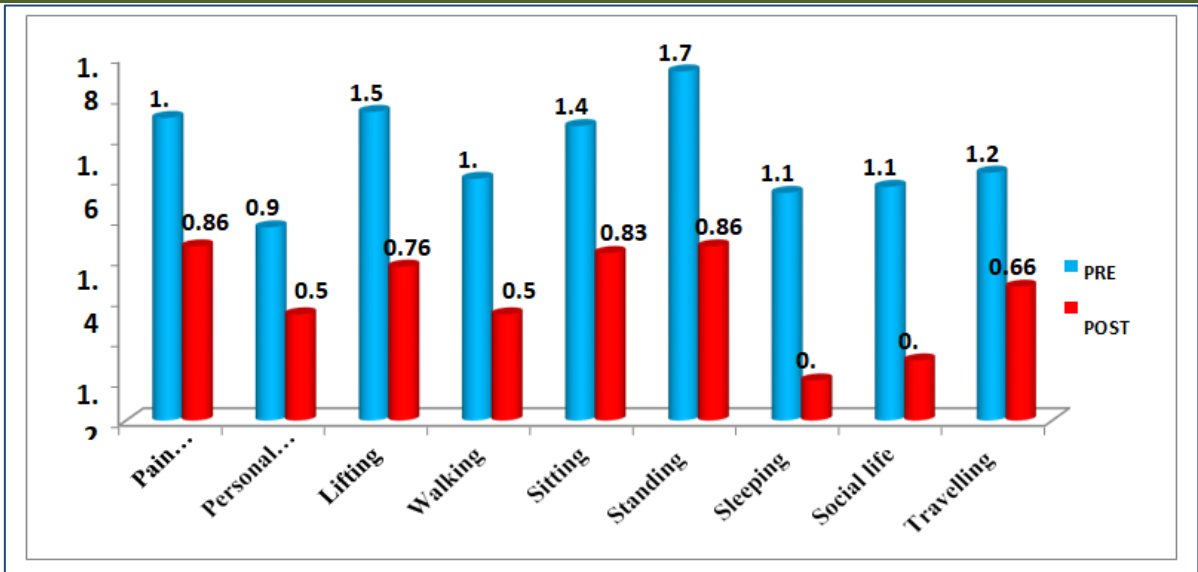


Figure 2: Represents mean of yoga group on Oswestry Disability Index (ODI)

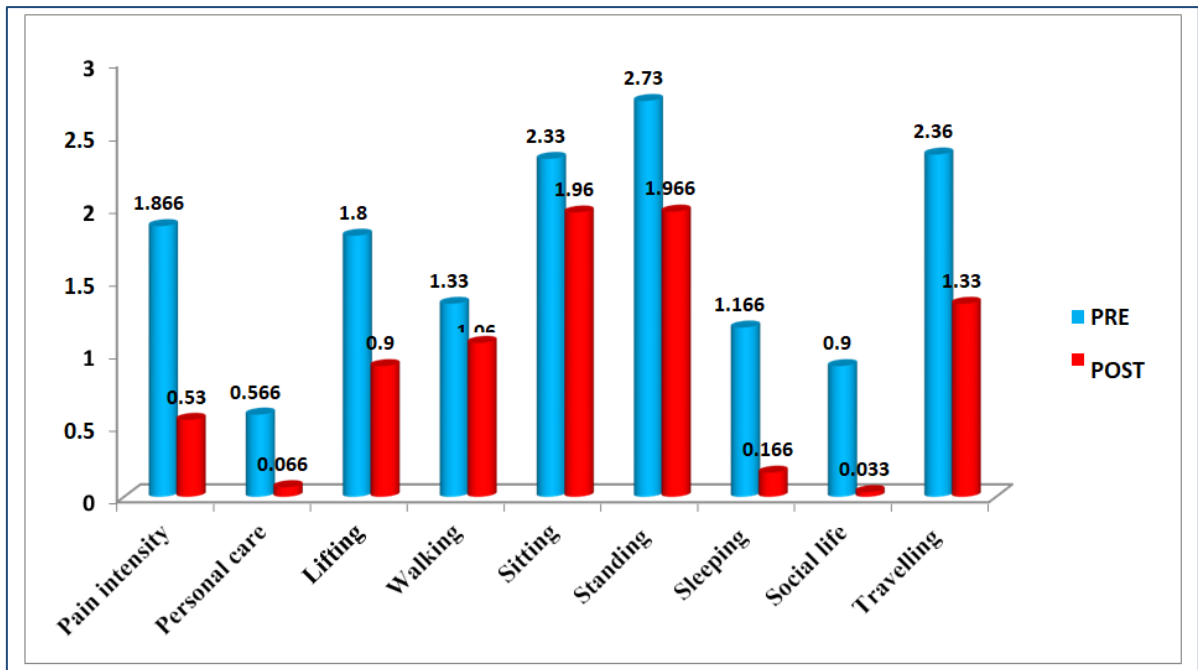


Figure 3: Represents mean of Naturopathy group on Oswestry Disability Index (ODI).

Table: 5 Comparison of outcome variables among the groups

Variables	Yoga group		Naturopathy group		Conventional Medicine group		P value
	Before	after	Before	after	Before	after	
VAS	5.6±1.32	2.93±1.40	6.53±2.04	3.44±1.77	6.70±1.8	5.98±2.04	0.001
ODI	19.11±5.56	10.90±5.58	15.51±5.41	12.78±6.62	18.89±4.20	15.62±5.87	0.02
FTFT	5.53±3.11	8.83±2.48	15.5±14.26	27.86±6.95	14.11±7.24	15.83±5.50	0.001
SF 36 (PCS)	29.56±10.22	41.23±9.56	31.25±5.59	39.56±8.20	34.52±10.25	38.98±7.98	0.02
SF-36 (MCS)	31.25±8.10	40.3±10.28	33.56±7.06	39.56±4.56	35.56±9.92	37.56±10.23	0.001

The physical component score (PCS); The mental component score (MCS)

DISCUSSION

The present study aimed to compare the effects of Yoga, Naturopathy, and Conventional Medical Treatment on managing low back pain. The results demonstrated significant improvements in pain perception, disability, spinal mobility, and quality of life across all three interventions, underscoring their potential as viable approaches in addressing this prevalent health concern. The findings of our study align with and extend previous research on the effects of Yoga, Naturopathy, and Conventional Medical Treatment in managing low back pain [11]. Consistent with prior investigations, our results demonstrate significant improvements in pain perception, functional capacity, spinal mobility, and quality of life among participants undergoing these interventions [12]. These findings are consistent with studies reporting pain reduction following Yoga interventions, enhanced functional outcomes associated with Naturopathy, and improved range of motion attributed to Yoga practice [13]. The positive impact of these interventions on Quality of Life (QOL) aligns with research emphasizing the multidimensional benefits of yoga and naturopathy on overall well-being [14, 15]. Importantly, our study supports the safety profile of these interventions, mirroring prior research [16]. Going beyond previous work, our study underscores the potential of Yoga, Naturopathy, and Conventional Medical Treatment as viable options for low back pain management. While contributing to the literature, our study shares limitations with prior research, such as a relatively short intervention period. Moving forward, further exploration into the mechanisms underlying these effects and longer-term studies are warranted to solidify the role of these interventions in comprehensive pain management strategies.

LIMITATIONS

The study's limitations include the relatively short follow-up period of 10 days, which may not capture longer-term effects of the interventions. Additionally, the study did not incorporate long-term follow-up or assess potential confounding variables that could influence the outcomes.

CONCLUSION

The results of this comparative analysis emphasize the effectiveness of Yoga, Naturopathy, and Conventional Medical Treatment in managing low back pain. All three interventions demonstrated significant improvements in pain intensity, disability, spinal mobility, and quality of life. This study contributes valuable insights into the diverse therapeutic approaches for low back pain management, highlighting the potential of holistic and alternative treatments to enhance patients' well-being.

FUTURE DIRECTIONS:

Further research with extended follow-up periods and larger sample sizes is warranted to explore the sustained effects of these interventions. Comparative studies involving different populations and diverse settings could provide a broader understanding of their applicability and efficacy in various contexts.

REFERENCES

1. Shobana, R., Maheshkumar, K., Venkateswaran, S. T., Geetha, M. B., & Padmavathi, R. (2022). Effect of long-term yoga training on autonomic function among the healthy adults. *Journal of Family Medicine and Primary Care*, 11(7), 3471.
2. Bagya, D. A., Ganesan, T., Maheshkumar, K., Venkateswaran, S. T., & Padmavathi, R. (2018). Perception of stress among yoga trained individuals. *National Journal of Physiology, Pharmacy and Pharmacology*, 8(1), 47-50.
3. Maheshkumar, K., Venugopal, V., Poonguzhali, S., Mangaiarkarasi, N., Venkateswaran, S. T., & Manavalan, N. J. C. E. (2020). Trends in the use of Yoga and Naturopathy based lifestyle clinics for the management of Non-communicable diseases (NCDs) in Tamilnadu, South India. *Clinical Epidemiology and Global Health*, 8(2), 647-651.
4. Venugopal, V., Venkateswaran, S. T., Poornima, R., & Maheshkumar, K. (2022). Recommendation of yoga and naturopathy intervention for the effective management of post covid syndrome. *Journal of Ayurveda and Integrative Medicine*, 13(3), 100617.
5. Kathiresan, N., Arunthathi, R., Venugopal, V., Narayanaswamy, K., Manavalan, N., & Maheshkumar, K. (2021). "It is the best part of our Hospital life": A Qualitative analysis on the impact of Yoga and Naturopathy as a Complementary therapy in the management of COVID-19. *Asian Journal of Psychiatry*, 64, 102789.
6. Szczerko, O., Cooley, K., Busse, J. W., Seely, D., Bernhardt, B., Guyatt, G. H., ... & Mills, E. J. (2007). Naturopathic care for chronic low back pain: a randomized trial. *PLoS One*, 2(9), e919.
7. Begum, M. R., & Hossain, M. A. (2019). Validity and reliability of visual analogue scale (VAS) for pain measurement. *Journal of Medical Case Reports and Reviews*, 2(11).
8. Fairbank, J. C., & Pynsent, P. B. (2000). The Oswestry disability index. *Spine*, 25(22), 2940-2953.
9. Kabra, A., Salekar, K., & Kalanekar, T. (2020). Effect of Jack Knife Stretching Versus Proprioceptive Neuromuscular Facilitation (Hold Relax) Stretching Technique in Asymptomatic Individuals with Hamstring Tightness: A Randomized Clinical Trial. *Indian Journal of Forensic Medicine & Toxicology*, 14(3).

10. Anderson, C., Laubscher, S., & Burns, R. (1996). Validation of the Short Form 36 (SF-36) health survey questionnaire among stroke patients. *Stroke*, 27(10), 1812-1816.
11. Deenadayalan, B., Venugopal, V., Poornima, R., Yogapriya, C., Akila, A., Pandiaraja, M., ... & Maheshkumar, K. (2022). Analgesic Effect of Hydrotherapy: A Narrative Review of Current Evidence. *CAND Journal*, 29(4).
12. Saxena, R., Gupta, M., Shankar, N., Jain, S., & Saxena, A. (2017). Effects of yogic intervention on pain scores and quality of life in females with chronic pelvic pain. *International Journal of Yoga*, 10(1), 9.
13. Mondal, A. B., Chatterjee, K. S., Mallik, N., Mondal, D., Samanta, S., & Takhur, S. (2016). An Integrated Approach of Research through Yoga, Naturopathy, Healing and Physiotherapy in Reducing Pain and Improving Functional Status of Osteoarthritis Patients Efficiently and Safely. *Research & Reviews: A Journal of Ayurvedic Science, Yoga and Naturopathy*, 3(2), 31-39.
14. Jerrin, R. J., Theebika, S., Panneerselvam, P., Manavalan, N., & Maheshkumar, K. (2021). Yoga and Naturopathy intervention for reducing anxiety and depression of Covid-19 patients—A pilot study. *Clinical Epidemiology and Global Health*, 11, 100800.
15. Malarvizhi, M., Maheshkumar, K., Bhavani, M., & Hariprasad, B. (2019). Effect of 6 months of yoga practice on quality of life among patients with asthma: A randomized control trial. *Advances in Integrative Medicine*, 6(4), 163-166.
16. Nair, R., Kaushik, G., Gaur, V. N., & Singh, R. P. (2015). Integrated Treatment of Yoga, Naturopathy and Physiotherapy in Reducing Pain and Improving Functional Status of Osteoarthritis Patients. *Int J Sci Res (IJSR)*, 4, 1148-1156p.