

ORIGINAL ARTICLE

A Comparison of Participant Rated Relaxation and affect following Yoga Nidra and Ayurvedic Massage an exploratory Observational Study

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ABSTRACT

Aim of the study: The study compared the immediate effects of a single session of yoga nidra (YN) and massage therapy (MT) on relaxation levels, vigor and affect in patients receiving either one of the two therapies, both administered when supine and intended for relaxation.

Methods and Material: In this exploratory comparative study, sixty patients were recruited from a wellness center in north India. Of these, thirty patients received YN (average age $\pm$ SD: 40.80 $\pm$ 14.10 years; male:female ratio: 21:9), while thirty patients received MT (average age $\pm$ SD: 47.10 $\pm$ 13.26 years; male:female: 14:16). Patients completed the relaxation state questionnaire (RSQ) and global vigor and affect scale (GVA) before and after YN or MT. Data were analysed using SPSS 24.0.

Results: MT alone increased general relaxation ($p < 0.05$; RM-ANOVA). Both interventions (1) increased muscle relaxation, (2) decreased sleepiness and (3) increased global vigor and global affect ($p < 0.05$; in all cases RM-ANOVA).

Conclusion: The present findings support both YN and MT as relaxing practices which increase positive affect and vigor, YN may be preferred if relaxation is to be accompanied by better awareness (lower sleepiness 32.33 versus 23.29 percent, YN vs. MT respectively), whereas MT facilitates muscle and overall relaxation.

KEYWORDS

• Yoga Nidra • Massage therapy • Sleepiness • Relaxation • Global Vigor
• Global affect

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INTRODUCTION

Complementary medical therapies include interventions which use specific movements, therapeutic touch and visualization among other methods.¹ These interventions are often combined to optimize the benefits. However, evaluating the effects of each treatment separately allows for better understanding of specific effects.

In India, among complementary therapies, two techniques are administered in the supine position to increase somatic relaxation; these are Yoga Nidra (YN) and therapeutic massage (MT).²

Yoga Nidra (*nidra* = sleep, in Sanskrit) is a practice that involves guided mental imagery performed while in a supine posture, *shavasana*, or the “corpse pose.” YN aims to induce a deep state of relaxation that differs from regular sleep, since practitioners remain aware of their surroundings.³ Swami Satyananda Saraswati and his teacher, Sivananda Saraswati originally developed the technique.³ YN helps individuals relax with a high level of awareness, promoting relaxation, clarity, and calmness, based on inner awareness, and visualizations.⁴

In Indian medicine, massage is used therapeutically as a part of ayurveda.⁵ In ayurveda massage, participants lie supine while warm herbal oils are applied with gentle pressure to balance the body’s energy channels, or *doshas*.⁶ Traditionally, MT is believed to increase softness of the skin and muscles, provide nourishment to the tissue, help remove waste products and enhance sleep, increase the disease fighting ability and longevity.⁷ Contemporary research has shown that MT increases calmness and improves sleep.⁸

This comparative study examined the immediate effects of a single session of YN and MT on relaxation levels and mood states in patients who were receiving either one of the two therapies, as determined by an ayurveda physician at a yoga and ayurveda hospital in north India. The hypothesis of this study was that both interventions would increase relaxation, with specific effects, such as YN would reduce sleepiness (or increase mental clarity) based on earlier research,⁴ whereas MT would induce sleepiness, also based on previous research.⁸

MATERIAL AND METHODS

Patients/Setting

Sixty patients with non-communicable diseases aged between 18 and 72 years (group average age: 43.95 ± 13.94 ; Male: Female ratio = 35:25) were recruited from a yoga and Ayurveda hospital in north India. Of these, thirty patients were receiving YN (average age: 40.80 ± 14.10 years) and thirty were administered MT (average age: 47.10 ± 13.26 years) based on the discretion of an Ayurveda physician. The sample size was not determined a priori as the study was exploratory in nature. There was no incentive to take part in the study. The patients were included in the study if they were (i) aged 18 years and above and (ii) receiving YN or MT based on discretion of an ayurveda physician. Patients were excluded from the study if they had conditions that involved acute discomfort and pain or were not able to complete the assessments. Signed informed consent was obtained from each participant. The study had prior approval from the institutional ethics committee (approval number: PRF/YRD/025/005). **The baseline characteristics of the patients are given in Table 1.** Informed consent was obtained from each patient.

Study design

The study was an exploratory comparative trial comparing the immediate effects of (i) YN and (ii) MT on self reported relaxation, vigor and affect in patients attending a wellness center in north India. Self reported relaxation was assessed using the relaxation state questionnaire (RSQ),⁹ whereas the global vigor and affect was measured using the global vigor and affect scale (GVA),¹⁰ before and after thirty minutes of YN or MT. The study was conducted between July and August 2025 with prior approval from the Institutional Ethics Committee (IEC) (reference number PRF/YRD/025/005).

TREATMENTS

Yoga Nidra (YN)

During the YN session, participants lay in *Shavasana* with their eyes closed, taking deep breaths for 5-10 minutes. Participants mentally repeated a positive affirmation three times, such as “I am calm and confident.” After this, they shifted their awareness through their body, starting from the right thumb and

moving through various parts to the head. Participants then focused on their natural breathing and noticed contrasting sensations to help balance their minds. Guided imagery followed, allowing them to visualize calming scenes like the ocean. The session ended with participants repeating their affirmation three more times and gradually returning to waking awareness, moving slowly to open their eyes. The duration of the YN session was 30 minutes.

Massage therapy (MT)

The MT was conducted on a specialized table (Sharma Enterprises, Delhi, India). Participants were instructed to sit with their backs straight. After explaining the procedure, the therapist applied warm oil, as recommended by the physician, to the shoulders and neck with gentle strokes. Participants were then guided to lie down in a supine position, starting on their left side before transitioning to lie flat on their backs, facing upward, with their eyes closed and normal breathing encouraged. The therapist applied oil to the upper body and performed the massage using bearable pressure on various body parts, then repeated the same steps on the back. After this, participants were instructed to return to a seated position. A head massage was given in the sitting position before concluding the therapy. The therapy lasted for 30 minutes.

ASSESSMENTS

Relaxation state questionnaire (RSQ)

The Relaxation State Questionnaire (RSQ) is designed to assess momentary states of relaxation and to evaluate the immediate effectiveness of relaxation exercises by comparing measurements taken before and after the exercises (Stemberg, 2022).⁹ The RSQ consists of 10 statements, and participants are asked to rate their current state of relaxation using one of five options: (i) strongly disagree, (ii) disagree, (iii) neither agree nor disagree, (iv) agree, and (v) strongly agree. The RSQ scores are categorized into four areas: (i) cardiovascular score, (ii) muscle score, (iii) general relaxation score, and (iv) sleepiness score. The sum of the scores from the first three categories (cardiovascular score, muscle score, and general relaxation score) provides an overall measure of the participant's relaxation state.

Global vigor and affect scale (GVAS)

The global vigor and affect scale (GVAS) was used to assess subjective feelings of global vigor and global affect.¹⁰ The GVAS is consisted of eight visual analogue scales. Of these, four are related to global vigor (i.e., alertness, sleepiness, motivational loss and weariness) and the remaining four scales assess global affect (i.e., happiness, sadness, calmness and tension). Each scale is scored between 0 to 100 points. A total global vigor score (GVS) and a total global affect score (GAS) are calculated using the defined formulas. The scores of total global vigor and total global affect range between 0 and 100 points. Lower scores indicate lower levels of global vigor or global affect.

Data analysis: Data were analyzed using separate repeated measures analysis of variance (RM-ANOVA) with SPSS version 24.0. Each ANOVA included one within-subject factor (i.e., states, with two levels: pre and post) and one between-subject factor (i.e., Groups, with two levels: YN and MT sessions).

RESULTS

Sixty patients with non-communicable diseases aged between 18 and 72 years (group average age: 43.95±13.94; Male-Female ratio = 35:25) were recruited from a yoga and Ayurveda hospital in north India. Of these, thirty patients were receiving YN (average age: 40.80 ± 14.10 years) and thirty were administered MT (average age: 47.10 ± 13.26 years). The patients of the two groups did not differ for (i) gender (Chi-square value = 3.36; p = 0.66) and age (p= 0.799, independent t-test). None of the patients reported any adverse effect of YN or MT which was specifically checked with them after YN or MT session. The baseline characteristics of the patients are given in Table 1.

Table 1: Baseline Characteristics of the patients in the two groups (Yoga-Nidra and massage therapy)

Characteristics	YN (n=30)	MT (30)
Age (years)		
Group mean age ± SD	40.80±14.10	47.10±13.26
Age range	18-70	23-72
Gender, n (%)		
Male	21 (70)	14 (46.67)
Female	9 (30)	16 (53.33)

table Cont....

Characteristics	YN (n=30)	MT (30)
Most common health conditions based on ICD 12, (n %)		
Diseases of the digestive system	7 (23.33)	1 (3.33)
Diseases of the Sleep-wake disorders	6 (20)	1 (3.33)
Diseases of the genitourinary system	2 (6.67)	3 (10)
Diseases of the circulatory system	3 (10)	2 (6.67)
Diseases of the musculoskeletal system or connective tissue	5 (16.67)	16 (53.33)
Endocrine, nutritional or metabolic diseases	1 (3.33)	3 (10)
Mental, behavioral or neuro developmental disorders	3 (10)	1 (3.33)
Diseases of the nervous system	2 (6.67)	NA
Diseases of the skin	1 (3.33)	NA
Diseases of the respiratory system	NA	1 (3.33)
Diseases of the visual system	NA	1 (3.33)
Pregnancy, childbirth or the puerperium	NA	1 (3.33)

Repeated measures analyses of variance (RM-ANOVA)

The ANOVA showed a significant difference between the States for (i) muscle scores ($F = 25.80$, $df = 58$, $p < 0.001$), (ii) General relaxation score scores ($F = 12.75$, $df = 58$, $p < 0.001$), (iii) Sleepiness scores ($F = 14.49$, $df = 58$, $p < 0.001$), (iv) Global vigor scores ($F = 25.02$, $df = 58$, $p < 0.001$) and (v) Global affect scores ($F = 31.93$, $df = 58$, $p < 0.001$). Also, General relaxation scores showed a significant interaction effects between the Groups and States ($F = 6.59$, $df = 58$, $p = 0.01$). The F , df and p values for Groups, States and interaction between Groups and States for (i) Relaxation state questionnaire, and (ii) Global vigor and affect scale are given in Table 2.

Table 2: The F , df and p values for fixed effects of States, Group, Group x States values of (i) Relaxation state questionnaire (RSQ), and (ii) Global vigor affect scale (GVA)

S. No	Variable	Factor	F value	df	P value
1.	<i>Cardiovascular scores</i>	States	0.78	1.00, 58.00	0.38
		Group	3.53	1, 58	0.07
		States x Group	0.28	1.00, 58.00	0.60
2.	<i>Muscle scores</i>	States	25.80	1.00, 58.00	<0.001
		Group	0.38	1, 58	0.54
		Group x States	3.46	1.00, 58.00	0.07
3.	<i>General relaxation score</i>	States	12.75	1.00, 58.00	<0.001
		Group	0.01	1, 58	0.94
		Group x States	6.59	1.00, 58.00	0.01
4.	<i>Sleepiness</i>	States	14.49	1.00, 58.00	<0.001
		Group	0.12	1, 58	0.73
		Group x States	0.45	1.00, 58.00	0.51
5.	<i>Global vigor</i>	States	25.02	1.00, 58.00	<0.001
		Group	0.10	1, 58	0.75
		Group x States	0.20	1.00, 58.00	0.66
6.	<i>Global affect</i>	States	31.93	1.00, 58.00	<0.001
		Group	2.05	1, 58	0.16
		Group x States	0.05	1.00, 58.00	0.82

Post hoc analyses

Relaxation state: (a) Muscle relaxation scores increased in the YN and MT group ($p < 0.05$ in both cases), (b) General relaxation increased in the MT group ($p < 0.05$ in both cases), (c) Sleepiness decreased in YN and MT groups ($p < 0.05$ in both cases).

Global vigor and affect scale: Global Vigor increased in YN and MT groups, and Global affect increased in YN and MT groups ($p < 0.05$ in all cases).

The group mean and SD values for RSQ and GVA for (i) YN, and (ii) OM are given in Table 3.

Table 3: Changes in relaxation state, global vigor, and global affect after yoga nidra (YN) and massage therapy (MT)

Measures	Variables	YN (n=30)		MT (n= 30)	
		Pre	Post	Pre	Post
<i>Relaxation state questionnaire (scores)</i>	Cardiovascular scores	3.72±0.93	3.52±0.90	4.00±0.89	3.95±0.95
	Muscle scores	3.17±0.91	3.52±0.57**	2.86±0.94	3.62±0.67***
	General relaxation scores	3.88±1.13	4.03±1.11	3.52±1.05	4.43±0.64***
	Sleepiness score	3.00±1.02	2.03±0.80***	2.92±1.19	2.24±1.39*
<i>Global vigor and affect scale (GVA-S)</i>	Global vigor	58.0±19.5	71.7±20.7***	55.31±19.56	67.47±22.01**
	Global affect	64.1±19.5	75.6±18.2***	56.63±21.29	69.03±23.47***

*p<0.05; **p<.01; ***p<0.001; RM ANOVA, with Bonferroni adjustment, pre compared with post session.

DISCUSSION

Yoga Nidra (YN) and massage (MT) were compared for their effects on levels of relaxation and sleepiness. MT alone increased general relaxation after the practice. Contrary to hypothesis, both practices reduced sleepiness, which was more after YN than MT (32.33 vs. 23.29 percent decrease, respectively). Also, both YN and MT increased muscle relaxation (MT (26.6%), YN (11.4%)), as well as favorable effects on vigor and affect. There were no significant differences observed in age and gender between the two groups.

YN practice involves directing the awareness inwards with withdrawal of focus on external sensations (equivalent to pratyahara (meaning the practice of withdrawing or turning the senses inward, away from external distractions and sensory stimuli).³ Practitioners of YN may appear to be asleep, but their consciousness is considered to be operating at a deep level of awareness.¹¹ This level of consciousness is accompanied by a profound sense of relaxation. Several psychophysiological effects of YN have been reported. Based on evaluation of the heart rate variability, YN practice was reported to increase cardiac vagal activity).¹² YN also shifts EEG frequency to slow delta waves, which are associated with restorative sleep).¹³ Though the EEG is suggestive of sleep, the practitioner retains their awareness, which may explain why feelings of actual sleepiness reduce with YN practice. The previously reported effects of YN hence support the present findings of greater muscle relaxation with reduced sleepiness, better vigor and improved affect after YN.

The most reported effects of MT are related to the mechanical effects of pressure exerted over the skin, subcutaneous tissues and muscles. These effects include increased blood and

lymphatic circulation, with vasodilatation and better lymph drainage, associated a reduction in fluid stagnation and limb swelling).¹⁴ MT decreases perception of muscle fatigue and blood flow compared to prone rest.¹⁵ In previous reports the effects on muscle tension were less clear.¹⁶ The present findings support greater overall relaxation as well as muscle relaxation specifically, after MT. The improved affect, greater vigor and reduced sleepiness after MT may be related to previously reported neurochemical effects, including an increase in beta-endorphins and oxytocin after MT.^{17,18} In particular, an increase in beta-endorphins may influence awareness by favourably affecting mood and pain perception.¹⁹

The findings of this exploratory study are limited by several factors: (i) the absence of a control group with no intervention, (ii) a small sample size, (iii) the non-random assignment of participants to the two groups, and (iv) the absence of objective measures to assess relaxation and sleepiness.

CONCLUSIONS

The present findings support both YN and MT as relaxing practices which reduce sleepiness and increase positive affect and vigor, YN may be preferred if relaxation is to be accompanied by better awareness (lower sleepiness), whereas MT facilitates overall relaxation better than YN.

Conflict of Interest: The authors declare that there is no conflict of interest.

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