

EFFECT OF GUIDED DEEP RELAXATION TECHNIQUES (DRT) ON MENTAL FATIGUE AMONG TYPE 2 DIABETIC PATIENTS

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Abstract

Background: The present study sought to understand the effect of Deep Relaxation Techniques (DRT) on mental tiredness levels among type 2 diabetic patients. **Method:** The study included 194 randomly selected patients from Sola Civil Hospital. Data were gathered using the “Fatigue Severity Scale (FSS)” and the “Visual Analogue Fatigue Scale (VAFS)”. A single-group pre-test and post-test research design was used, with data analysed using the paired T-test. **Results:** The results showed a considerable reduction in fatigue levels following intervention, with pre-test and post-test mean FSS scores of 50.98 and 25.22, respectively, and VAFS scores of 2.96 and 7.74. The T-values for both scales were significant at the 0.01 level, indicating that DRT lowers mental fatigue in type 2 diabetic individuals. **Conclusion & Findings:** These findings support the use of DRT in diabetes care to elevate patient well-being and adherence to treatment strategies. Future research should look at the long-term advantages, compare different relaxation techniques, and involve varied demographics to improve the generalizability of the findings.

Keywords: DRT: Deep Relaxation Techniques, FSS: Fatigue severity scale, VAFS: Visual Analogue Fatigue Scale, Mental Fatigue, Type 2 Diabetic

INTRODUCTION

Deep Relaxation Techniques (DRT) are a series of techniques that aim to produce a deep and immersive state of relaxation. Unlike traditional relaxation approaches, DRT focuses on integrating the body and mind, emphasising the importance of breathing in establishing this connection. Practitioners often spend 10 to 15 minutes performing DRT exercises, which teach them how to build awareness and release tension. This practice not only promotes relaxation, but it also helps people gain a better awareness of their inner selves, allowing them to access their underlying wisdom and intuition.

In contrast, fatigue is a complex phenomenon characterised by an overpowering sense of tiredness or energy depletion. It extends beyond mere tiredness to a general lack of motivation and vitality. While weariness can result from a variety of medical issues, it can also be caused by lifestyle factors such as insufficient exercise and poor nutritional choices. This disorder affects people both physically and cognitively, limiting their capacity to complete everyday tasks and participate in social activities.

Fatigue is a common and often debilitating symptom associated with diabetes that can have a substantial influence on an individual's wellbeing. It is associated with a variety of physiological, psychological, and situational aspects, including the difficulties of managing the illness on an ongoing basis. Fatigue can compound the challenges of diabetes self-management, making it difficult for people to stick to treatment plans and maintain good health.

Type 2 diabetes mellitus (DM) is the most common kind of diabetes, characterised by high blood sugar, insulin resistance, and insufficient insulin synthesis. It is influenced by an intricate interaction of genetic,

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environmental, and behavioural factors. Type 2 diabetes has become a major public health concern since its prevalence has increased globally over time. This chronic metabolic condition has a considerable impact on healthcare systems, especially in low-income areas.

Despite its ancient beginnings, which date back thousands of years, type 2 diabetes continues to present substantial issues for healthcare practitioners and politicians alike. The disease's increasing prevalence highlights the critical need for better preventative and management techniques to reduce its impact on individuals and communities globally.

LITERATURE REVIEW

The deep relaxation technique (DRT) is recognised with an effective therapy for a variety of stress-related disorder, including hypertension and sleeplessness (Nagendra, 1988). DRT promotes serenity, which aids in meditation and reduces physiological arousal, with guided relaxation showing promise in influencing a larger variety of autonomic measurements (Vempati & Telles, 2002). Our study intends to investigate the comparative effectiveness of DRT in lowering state anxiety and improving concentration, an area that has gotten little attention thus far.

Fatigue is a usual symptom which has a substantial effect on an individual's quality of life (EFE & Olgun, 2011; Polykandriotis et al., 2019). Effective tiredness management can result in improved overall well-being (EFE & OLGUN, 2011). Breathing exercises, among other techniques, are used to combat weariness by increasing oxygen delivery to tissues and restoring body-mind balance through adequate breath regulation.

Fatigue is a typical complaint in diabetes, and it can remain even when glycemic control is achieved (Singh and Kluding, 2013; Goedendrop et al., 2014). Mental exhaustion, defined by mood swings and cognitive deterioration, impairs job performance and safety (Ishii et al., 2014; Hopstaken et al., 2015). Innovative intelligent methods have been introduced to detect mental weariness by utilising physiological and psychophysiological markers (Parekh et al.).

Yoga and relaxation techniques have emerged as effective adjunct therapy for diabetes patients, providing benefits such as improved health attitudes, stress reduction, and social support (Carnethon et al., 2006; Maser et al., 2003). Lifestyle therapies such as yoga and meditation have showed promise in lowering the incidence of diabetic complications and decreasing the progression to type 2 diabetes mellitus (Tuomilehto et al., 2001; Bali, 2013).

Type 2 diabetes mellitus (DM) is a major global health concern, with prevalence anticipated to double in the next decade, especially in ageing populations and developing nations (American Diabetes Association, 2010). Diabetes has a long history, and its incidence is continuously increasing around the world. Type 2 diabetes, defined by insulin resistance and hyperglycemia, is caused by a complex interaction of genetic, environmental, and behavioural variables (Maitra & Abbas, 2005; Chen et al., 2012).

OBJECTIVE OF THE STUDY

The objective of the present research is to examine the impact of Deep Relaxation Techniques (DRT) on levels of mental fatigue amidst individuals diagnosed with type-2 diabetes.

RESEARCH METHODOLOGY

Sample

The current study used convenient sampling procedures to choose a sample of 194 participants from the Ahmedabad area.

Inclusion criteria

The inclusion criteria for this study comprised individuals of any gender or age who have been diagnosed with type 2 diabetes mellitus and are experiencing fatigue. Participants who have had diabetes for at least 5 years were comprised in the study.

Exclusion criteria

Participants with type 2 diabetes mellitus who have other medical complications were excluded from the study. Additionally, individuals with type 1 diabetes mellitus were not considered for inclusion. Healthy individuals or those with medical conditions other than type 2 diabetes were also excluded from the study.

INTERVENTION MODULE

Deep Relaxation Technique (DRT)

Deep Relaxation Techniques (DRT) typically last 10 to 15 minutes, with the practitioner focused on bringing awareness and letting go. This technique allows people to transcend their minds and reconnect with their inner genuine nature, which is a wellspring of wisdom and intuition for everyone. DRT can be performed in Shavasana (corpse pose) while lying down or sitting in a chair. To begin, make yourself comfortable and entirely relaxed. The practitioner then scans their complete body from toes to head, softly encouraging relaxation for each portion of the body one at a time. Throughout this process, people are advised to be attentive of the sensations of comfort and discomfort in each aspect of their body.

No.	Practice	Round	Minutes
1.	Prayer: - ॐ सह नावतु । सह नौ भुनक्तु । सह वीर्यं करवावहै । तेजस्विनावधीतमस्तु मा विद्विषावहै । ॐ शान्तिः शान्तिः शान्तिः ॥	1	1
2.	Total awareness of the lower part of the body with A-kara chanting.	3 A-Chanting	3
3.	Total awareness of the middle part of the body with U-kara chanting.	3 U-Chanting	3
4.	Total awareness of the Upper part of the body with M-kara chanting.	3 M-Chanting	3
5.	Observe your entire body from toes to head.	3 AUM-Chanting	3
6.	Closing Prayer: - ॐ सर्वे भवन्तु सुखिनः सर्वे सन्तु निरामयाः । सर्वे भद्राणि पश्यन्तु मा कश्चिद्दुःखभाग्भवेत् । ॐ शान्तिः शान्तिः शान्तिः ॥	1	1
Total Duration			14 mins

The relaxation technique:

1. Lower Body Relaxation (Akara)

- Begin by shifting your focus from the tips of your toes to your waist, concentrating on each area of your lower body.
- Completely relax your lower body.
- Chant the sound "A" (A-kara) once or twice and feel the vibration in your lower body.

2. Middle Body Relaxation (U-Kara):

- Focus your attention on the abdominal region, visualising all the vital organs in your abdomen and chest.
- Move your focus to the neck area, including your back and both hands, one by one.
- Completely relax the central section of your body.
- Chant the sound "U" (U-kara) once or twice and feel the vibration mostly in the middle of your body.

3. Upper Body Relaxation (M-Kara)

- Slowly shift your focus to each section of your head region.
- Completely relax your head region.

- Chant the sound "M" (M-kara) once or twice and focus on the vibration in your brain region.
4. **Unified relaxation (AUM):**
- Relax and observe your complete body, from toes to head.
 - Chant "AUM" together in a single breath once or twice to feel the reverberation throughout your body.
5. **Expanding Awareness**
- Use your imagination to envision the huge, gorgeous sky.
 - Expand your awareness as far as you can and merge into the blue sky.
 - Experience boundless happiness, a joyful condition of silence, and all-pervasive awareness.
6. **Return to Body Consciousness**
- Slowly bring yourself into physical awareness.
 - Chant "AUM" for three to five rounds.
 - Feel the resonance all throughout your body, the relaxing and massaging sensation from your toes to your brain, the lightness, alertness, and movement of energy.

VARIABLES

- **Independent Variables**

Deep Relaxation Technique (DRT): A method of deep relaxation that includes techniques such as attentive body scanning, chanting sounds (A-kara, U-kara, M-kara), and visualising expansiveness.

- **Dependent Variable**

Fatigue: The level of mental and physical Fatigue felt by participants, particularly those with type 2 diabetes.

TOOLS

The following tools were utilised for data collection:

1. **"The fatigue severity scale (FSS)":** The FSS is a self-examined questionnaire for determining the severity of fatigue and its impact on routine tasks. Participants rate statements about how exhaustion impacts their lives on a 1–7 scale, with higher ratings indicating more severe fatigue.
2. **"The Visual Analogue Fatigue Scale (VAFS)":** The VAFS is a simple and commonly used instrument for assessing fatigue. Participants rate their exhaustion level on a continuous scale, usually a 10-centimeter line, with one end representing "no fatigue" and the other representing "worst possible fatigue." This scale provides a rapid and subjective assessment of fatigue severity.

PROCEDURE

For data gathering, the following actions were taken:

- **Permission and Consent**

The investigation was conducted with prior approval from numerous clinics and groups. Consent was sought from all individuals to ensure that their participation was voluntary and purely for research reasons.

- **Establishing rapport**

Rapport was built with participants in small, manageable groups to promote comfort and openness.

- **Administering questionnaires:**

To assess baseline fatigue levels, participants were administered the "Fatigue Severity Scale (FSS)" and the "Visual Analogue Fatigue Scale (VAFS)."

- **Data Scoring**

After collecting the completed surveys, scoring was carried out using the scoring keys supplied in the manuals for each tool.

- **Pre-test Data Collection**

The initial data collection served as a pre-test measure of participants' fatigue levels.

- **Yoga Interventions**

Each participant undertook a one-month yoga intervention that included Deep Relaxation Techniques (DRT).

- **Post-Test Data Collection**

Following the 1-month yoga intervention, the same questionnaires (FSS and VAFS) were completed again to assess post-intervention fatigue levels.

- **Data Organisation**

The pre-test and post-test data were organised into an Excel sheet, with variables clearly labelled for analysis.

RESULT & DISCUSSION

Results: Pre and Post Deep Relaxation Techniques on Fatigue Severity Scale (FSS) for Type 2 Diabetic Patients

Table No. 1

Data	N	Mean	SD	t	Level of significance
Pre	194	50.98	5.40	48.41	0.01
Post	194	25.22	6.48		

Table 1 shows the t-values for adults' fatigue severity before and after a yoga intervention. The computed t-value of 48.41 is statistically significant at the 0.01 level. In conclusion, the null hypothesis, which states that yoga intervention has no significant effect on tiredness severity between type-2 diabetic patients, is rejected. As a result, it is determined that the yogic intervention has a significant effect on the Fatigue Severity Scale (FSS) of type 2 diabetic patients.

The mean pre- and post-intervention FSS scores for type-2 diabetic patients were 50.98 and 25.22, respectively, with standard deviations of 5.40 and 6.48. These findings show that yogic intervention, specifically Deep Relaxation Techniques (DRT), dramatically reduces fatigue in type 2 diabetic patients.

Results: Pre and Post Deep Relaxation Techniques on Visual Analogue Fatigue Scale (VAFS) for Type 2 Diabetic Patients

Table No. 2

Data	N	Mean	SD	t	Level of significance
Pre	194	2.96	0.96	61.25	0.01
Post	194	7.74	0.88		

Table 2 shows the t-values for the Visual Analogue Fatigue Scale (VAFS) of people before and after a yoga intervention. The computed t-value of 61.25 is showing statistically significant at the 0.01 level. The present study rejects the null hypothesis that yoga intervention had no significant effect on VAFS in type 2 diabetic patients. As a result, it is determined that the yogic intervention has a considerable effect on the Visual Analogue Fatigue Scale (VAFS) in type 2 diabetics.

The mean VAFS scores before and after intervention among type-2 diabetic patients were 2.96 and 7.74, respectively, with standard deviations of 0.96 and 0.88. These findings show that yogic intervention, specifically Deep Relaxation Techniques (DRT), dramatically reduces fatigue in type 2 diabetic patients.

IMPLICATIONS OF STUDY

These discoveries have a few practical ramifications.

- **Healthcare Interventions:** Including DRT in routine care for type 2 diabetes patients can be a cost-effective and non-invasive way to control fatigue, which is a common and debilitating complaint in this population.
- **Patient Empowerment:** Teaching patients DRT skills might encourage them to actively manage their disease, potentially boosting adherence to treatment plans and general well-being.
- **Broader Applications:** Although this study focused on type-2 diabetes, the principles of DRT may be useful for other chronic illnesses characterised by fatigue, necessitating additional research in these areas.

CONCLUSION

This study contributes to the expanding evidence base that advocate for the utilization of Deep Relaxation Techniques (DRT) as an effective intervention for reducing fatigue in people suffering from type 2 diabetes. DRT, which fosters a deeper connection between mind and body, not only relieves physical symptoms but also improves mental well-being, providing a comprehensive approach to controlling this chronic condition. As the global spread of type 2 diabetes rises, including these alternative medicines into standard care protocols has the potential to greatly enhance patient outcomes and quality of life. It Indicates that yogic intervention could help in reducing FSS & VAFS among type-2 diabetic patients.

LIMITATIONS OF THE STUDY

While the findings are encouraging, the study carries significant limitations as under:

- **Sample Size:** The study used a small sample size of 194 participants from Ahmedabad, which can be restriction of the findings' generalizability. Further research aiming bigger and more bigger groups is required to corroborate these results.
- **Short Duration:** The intervention lasted one month. Long-term research is needed to understand the long-term effects of DRT on fatigue.
- **Control Group:** There is no control group in present study, it is difficult to remove out placebo effects or other external factors that may have influenced the outcomes of the study. To draw more robust conclusions, future study should include a control group

FURTHER SCOPE OF STUDY

- **Longitudinal Studies:** Conduct long-term research to see whether DRT benefits can be sustained over time. Assess the need for follow-up interventions or booster sessions.
- **Comparative studies:** Compare the effectiveness of various DRT methods (for example, progressive muscular relaxation and mindfulness meditation). Evaluate the effectiveness of integrating DRT with other interventions (for example, physical activity, dietary changes, and cognitive-behavioural therapy).
- **Biometric Measurements:** Use objective data gathering (e.g., cortisol levels, heart rate variability, EEG) to supplement subjective assessments. Utilise wearable technologies to provide continuous monitoring and real-time feedback.
- **Psychological mechanisms:** Investigate the psychological mechanisms via which DRT influences mental tiredness, with a focus on cognitive functions and emotional regulation. Use neurocognitive exams to examine changes in brain function and structure.
- **Tailored interventions:** Create personalised DRT therapies that address individual cognitive and emotional difficulties. Implement feedback mechanisms to provide personalised recommendations and assistance in optimising DRT practice.

CONFLICT OF INTEREST

The authors have no conflicts of interest to declare. All co-authors have seen and agree with the contents of the manuscript and there is no financial interest to report. We certify that the submission is original work and is not under review at any other publication.

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