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REVIEWER'S REPORT

Manuscript No.: IJAR-59082

Title: integrative Yoga and Naturopathic Management for Hypothyroidism with Co-existing Musculoskeletal Pain: A Case Report,

Recommendation:

Accept as it is .....

Accept after minor revision.....

Accept after major revision .....

Do not accept (*Reasons below*) .....

Rating	Excel.	Good	Fair	Poor
Originality		X		
Techn. Quality		X		
Clarity		X		
Significance			X	

Reviewer's ID: JPR-142

Detailed Reviewer's Report

Assessment

This case report describes a 43-year-old woman with a long-standing history of hypothyroidism accompanied by cervical spondylitis, right frozen shoulder, plantar fasciitis, and migraine. The patient received a 12-day multimodal intervention consisting of naturopathic dietary intervention, fasting, hydrotherapy, mud therapy, massage, acupuncture and moxibustion, yoga therapy, physiotherapy, and heliotherapy. Multiple clinical and functional outcome measures were used before and after intervention, with reported improvements in pain, disability, hypothyroidism-related symptoms, migraine-related disability, foot function, and shoulder range of motion. A six-month follow-up without reported adverse events is also described.

The topic is relevant and potentially suitable for publication as a case report. However, several methodological, clinical, reporting, and interpretative issues require substantial clarification. In particular, the manuscript should distinguish between improvement in **symptom burden/musculoskeletal function** and evidence of improvement in **biochemical thyroid function**.

Major Comments

1. Clarify the primary objective and clinical contribution of the case

The manuscript presents the intervention as management of hypothyroidism together with multiple musculoskeletal conditions. However, the principal objective and clinical contribution are not sufficiently defined.

The authors should clearly state whether the purpose of the report is to demonstrate:

1. improvement in hypothyroidism-related symptoms;
2. improvement in musculoskeletal pain and disability;
3. improvement in functional mobility;
4. improvement in biochemical thyroid status; or

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5. the feasibility of a multimodal integrative approach.

At present, the reported outcomes predominantly concern symptoms and functional measures. The manuscript should therefore avoid implying that hypothyroidism itself was treated or reversed unless objective thyroid-function data support such a conclusion.

2. Provide complete thyroid-function laboratory data

This is the most important scientific issue.

The Methods state that laboratory investigations and relevant laboratory parameters were assessed before and after the intervention, but the manuscript does not present the actual laboratory values.

Because the patient had established hypothyroidism and was receiving **Thyronorm 100 µg/day**, objective thyroid-function data are particularly important.

The authors should provide, where available:

- TSH
- free T4
- free T3
- anti-TPO antibodies, if assessed
- other relevant thyroid parameters
- pre-intervention values
- post-intervention values
- six-month follow-up values, if available.

3. Clarify continuation of levothyroxine treatment

The manuscript states that the patient was taking Thyronorm 100 µg [1-0-0] and that medication was supervised during the intervention.

However, it should explicitly state:

- whether levothyroxine was continued throughout the 12-day intervention;
- whether the dose remained unchanged;
- whether administration timing was altered during fasting;
- whether any other medications were prescribed;
- whether analgesics or migraine medications were used;
- whether any medication changes occurred during six-month follow-up.

This information is essential for interpreting the observed improvements.

4. Resolve the discrepancy in the reported VAS score

There is a clear internal inconsistency.

Table 3 reports:

VAS: 10/10 → 3/10.

However, the Discussion states:

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VAS: 8 → 3.

The authors must verify the original clinical record and provide one consistent baseline value throughout the manuscript.

This discrepancy should be corrected in the:

- Abstract, if mentioned;
- Results/Table 3;
- Discussion;
- any supplementary material.

5. Clarify whether the intervention is truly integrative or a multimodal package

The patient received a large number of simultaneous interventions, including hydrotherapy, mud therapy, massage, acupuncture/moxibustion, yoga, physiotherapy, heliotherapy, dietary modification, and fasting.

This creates a major attribution problem.

Because all interventions were administered concurrently, the case cannot establish which individual intervention was responsible for improvement.

The Discussion should therefore avoid attributing specific clinical outcomes to individual therapies as though causality were demonstrated.

A more appropriate interpretation would be:

The observed clinical improvement may reflect the combined effects of the multimodal intervention. However, the individual contribution of each component cannot be determined from this single case.

6. Strengthen the description of the fasting intervention

The dietary protocol includes several days of juice fasting, including ash gourd juice, tender coconut water, lemon-honey water, apple juice, and carrot juice.

Given the patient's obesity and chronic hypothyroidism, the authors should provide additional information regarding safety monitoring during fasting.

Please clarify whether the following were monitored:

- blood glucose;
- blood pressure;
- hydration;
- electrolyte status;
- weight;
- symptoms of weakness/dizziness;
- other adverse events.

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The Methods indicate that vital parameters were monitored daily, but more detailed reporting would improve reproducibility and clinical transparency.

7. Report the weight and BMI outcomes

The therapeutic focus specifically included reduction of body weight.

The baseline weight was 90 kg and BMI was 31.1 kg/m².

The Methods also state that height, weight and BMI were assessed.

8. Improve the six-month follow-up reporting

The manuscript states that the patient remained clinically stable and reported no adverse events during six months of follow-up.

9. Provide a clear case timeline

The manuscript would benefit considerably from a chronological timeline.

10. Clarify diagnostic confirmation of each condition

The manuscript reports cervical spondylitis, right frozen shoulder, plantar fasciitis, migraine, and hypothyroidism.

However, the diagnostic criteria or supporting investigations are not adequately described.

Please clarify, where applicable:

- how hypothyroidism was diagnosed;
- whether cervical spondylosis/spondylitis was supported by imaging;
- how adhesive/frozen shoulder was diagnosed;
- how plantar fasciitis was diagnosed;
- how migraine was diagnosed;
- whether other causes of shoulder/heel pain were excluded.

This is particularly important because several conditions can independently improve with physiotherapy, exercise, rest, analgesia, or natural fluctuation.

11. Clarify shoulder range-of-motion measurement

The reported improvement in shoulder abduction from approximately **60° to 140°** is one of the strongest objective findings in the case.

The authors should specify:

- whether active or passive ROM was assessed;
- whether a goniometer was used;
- who performed the measurement;

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- whether the same assessor measured both time points;
- whether other shoulder movements were assessed.

12. Reconsider the mechanistic claims in the Discussion

The Discussion attributes improvements to circulation, inflammation, pain modulation, metabolic regulation, autonomic regulation, and hypothalamic-pituitary-axis effects.

Some of these mechanisms may be biologically plausible, but they cannot be established from a single case.

For example, the statement that yoga improved the condition by regulating the hypothalamic-pituitary axis should be presented cautiously.

The authors should use terminology such as:

- may have contributed;
- could potentially explain;
- "is hypothesized to";
- "may be consistent with".

Avoid definitive causal language.

13. Avoid claiming that the intervention addressed the "underlying cause" of hypothyroidism

The manuscript states that dietary modifications, detoxification practices and naturopathic remedies aimed at both symptoms and the underlying cause of hypothyroidism.

This statement is too broad unless the underlying etiology of the patient's hypothyroidism has actually been established.

The manuscript should identify the cause of hypothyroidism if known. If the etiology is unknown, the phrase **underlying cause should be removed**.

14. Patient perspective should be added

A case report would be strengthened by including a brief patient perspective describing:

- the patient's perception of symptom improvement;
- functional improvement;
- acceptability of the intervention;
- willingness to continue the intervention.

This is particularly relevant for a multimodal lifestyle-based intervention.

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15. Improve the intervention table

Table 1 contains substantial information about the intervention, which is a strength, but its presentation should be standardized.

For yoga, the individual asanas and pranayama are provided, but the exact sequence and intensity could be described more clearly.