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Comparative Evaluation Of Phytoestrogens And Hormone Replacement Therapy Using Menopause Rating Scale (MRS)-A Prospective Observational Study.

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I. Introduction

Menopause is a natural transition in a woman's life, often accompanied by vasomotor, psychological, and urogenital symptoms.

The Menopause Rating Scale (MRS) is a validated tool for assessing symptom severity.

While Hormone Replacement Therapy (HRT) remains the gold standard for symptom relief but carries risks VTE, breast cancer and cardio vascular events.

phytoestrogens have gained interest as a safer, plant-based alternative with selective estrogenic activity and a safer profile

II. Aims & Objectives

Compare the effectiveness of phytoestrogens vs HRT using MRS.
Assess symptom improvement across somatic, psychological, urogenital domains
Compare total MRS scores
Evaluate side effects
Assess patient tolerance and satisfaction.

III. Materials And Method

A prospective comparative clinical study
conducted on 100 postmenopausal women (45–60 yrs).
Group A (n=50): standard HRT regimen
Group B (n=50): Phytoestrogen (Soy isoflavone 60 mg/day).

- Duration: 6 month (march-sept 2025)
- Tool: Menopause Rating Scale (MRS, 11 symptoms).
- Pre and post-treatment MRS recorded.
- Statistical analysis: Paired t-test, $p<0.05$ significant.

Phytoestrogens:
Standardized soy isoflavone capsules (60 mg/day).
Oral administration, taken after food, for 6 month.

HRT:
Conjugated estrogen 0.625 mg daily ± medroxyprogesterone 2.5 mg for women with intact uterus.

MRS (MENOPAUSE RATING SCALE)
Consists of 11 symptoms across 3 domains: Somatic (4 items)
Each symptom scored 0 (none) to 4 (very severe)
Validated internationally and widely used in menopause research.

Baseline Demographics

Parameter	HRT (n=50)	Phytoestrogen (n=50)	p-value
Age (years	52.8 ± 3.4	53.1 ± 3.1	0.62
BMI (kg/m²)	25.2 ± 2.3	24.9 ± 2.5	0.45
Parity	2.4 ± 0.7	2.5 ± 0.6	0.68
Duration 3.	8±1.2	3.6 ± 1.1	0.51

IV. Results

Table 1: Comparison of individual MRS domain scores between HRT and Phytoestrogen groups at baseline and after 6 months.

Symptom (MRS Domain)	HRT Baseline	HRT 6 mo	Phytoestrogen Baseline	Phytoestrogen 6 mo	p-value
1. Hot flushes/sweating	3.4 ± 0.7	1.0 ± 0.5	3.3 ± 0.6	1.5 ± 0.6	<0.01
2. Heart discomfort	2.5 ± 0.8	0.9 ± 0.4	2.6 ± 0.7	1.2 ± 0.5	<0.05
3. Sleep problems	2.9 ± 0.9	1.1 ± 0.6	2.8 ± 0.8	1.3 ± 0.7	<0.05
4. Joint/muscle discomfort	3.1 ± 0.8	1.5 ± 0.7	3.0 ± 0.9	1.6 ± 0.6	NS
5. Depressive mood	2.7 ± 0.9	1.0 ± 0.5	2.6 ± 0.8	1.1 ± 0.6	NS
6. Irritability	2.8 ± 0.8	1.0 ± 0.5	2.7 ± 0.9	1.1 ± 0.6	NS
7. Anxiety	2.9 ± 0.7	1.1 ± 0.6	3.0 ± 0.7	1.2 ± 0.5	NS
8. Physical/Mental exhaustion	3.0 ± 0.8	1.2 ± 0.5	3.1 ± 0.9	1.3 ± 0.6	NS
9. Sexual problems	2.8 ± 0.9	1.2 ± 0.6	2.7 ± 0.8	1.5 ± 0.7	<0.05
10. Bladder problems	2.5 ± 0.8	1.0 ± 0.4	2.4 ± 0.7	1.3 ± 0.5	<0.05
11. Vaginal dryness	3.0 ± 0.7	1.0 ± 0.5	3.1 ± 0.8	1.6 ± 0.7	<0.01

Table 2: Domain-wise and Total MRS Scores Comparison with % Improvement.

MRS Domain	HRT Baseline	HRT 6 mo	Phytoestrogen Baseline	Phytoestrogen 6 mo	% Improvement (HRT)	% Improvement (Phyto
Somatic (1–4)	11.9 ± 2.4	4.5 ± 1.5	11.7 ± 2.2	5.6 ± 1.6	62.2%	52.1%
Psychological (5–8)	11.4 ± 2.3	4.3 ± 1.4	11.5 ± 2.4	4.7 ± 1.5	62.3%	58.5%
Urogenital (9–11)	8.3 ± 1.7	3.2 ± 1.2	8.2 ± 1.6	4.4 ± 1.3	61.4%	46.3%
Total MRS (0–44)	31.6 ± 4.2	11.9 ± 3.3	31.4 ± 4.3	14.7 ± 3.6	62.3%	53.2%

Side Effects

Treatment	Side Effects Noted	no.of women	incidence
HRT	breast tenderness,	6	12%
	spotting	4	8%
Phytoestrogens	bloating	5	10%
	nausea	2	4%

No serious adverse events in either group

Both groups showed significant improvement in total MRS scores.

-HRT Group: Mean total MRS reduced from 31.6 ± 4.2 to 11.9 ± 3.3 (62.3% improvement)

-Phytoestrogen Group: Mean total MRS reduced from 31.4 ± 4.3 to 14.7 ± 3.6 (53.2% improvement)

HRT demonstrated greater efficacy in vasomotor and urogenital symptoms ($p < 0.01$), whereas phytoestrogens showed comparable improvement in psychological domains, with fewer side effects.

V. Discussion

The present study compared the efficacy of phytoestrogens (soy isoflavones) and hormone replacement therapy (HRT) in relieving menopausal symptoms using the Menopause Rating Scale (MRS).

Our findings demonstrate that both treatment modalities significantly reduced the overall MRS score; however, the magnitude and pattern of improvement differed between the two groups.

HRT continues to be the most effective modality for vasomotor symptoms, owing to its direct estrogenic effect on thermoregulatory centers in the hypothalamus (4,14,20).

in the current study, the HRT group showed a faster and more pronounced reduction in vasomotor scores, consistent with observations from the WHI trial and other major reviews (4,12).

This aligns with the established role of systemic estrogen in stabilizing serotonergic and noradrenergic pathways involved in hot flush generation (5,11).

Phytoestrogens, in contrast, exhibited a gradual but significant improvement in vasomotor and psychological domains.

Isoflavones act as selective estrogen receptor modulators (SERMs), preferentially binding to ER-β, thereby offering mild estrogenic activity without the risks associated with systemic HRT (7,8,10).

Multiple meta-analyses (6,17,20) support a similar pattern of improvement. Our results add to this evidence by showing a meaningful reduction in total MRS scores by 6 month in the phytoestrogen group, indicating their value as a safer alternative for women with contraindications to HRT

Interestingly, the urogenital domain improved modestly in the phytoestrogen group but more significantly under HRT.

This is expected, as genitourinary symptoms of menopause are primarily driven by local estrogen deficiency affecting vaginal epithelium and pelvic floor support (2,3).

Systemic HRT offers stronger epithelial regeneration compared to phytoestrogens, which have limited local bioavailability (13,15,16).

From a safety viewpoint, no serious adverse effects were noted in either group— consistent with published literature.

HRT carries potential risks such as thromboembolism and breast cancer (4,18), but these are dose- and duration-dependent.

Our short study duration may have minimized risk expression.

Phytoestrogens, as seen in prior trials (18,19), were well tolerated, with only mild gastrointestinal discomfort reported in a few participants.

The physiological basis behind isoflavone efficacy supports their use: they modulate estrogenic activity, improve endothelial function, and exert antioxidant effects (9,10,18).

The modest yet steady improvement in psychological and somatic domains seen in this study aligns with these mechanisms.

This makes phytoestrogens suitable for women seeking non-hormonal options or those apprehensive about HRT.

Comparison with other studies indicates that while phytoestrogens may not match the robust vasomotor symptom control of HRT, they remain effective in lowering overall symptom burden.

Meta-analyses demonstrate a 40–50% reduction in hot flush frequency with isoflavones, comparable to our findings (6,17,20).

Our study thus reinforces the place of phytoestrogens in menopausal care, especially when individualized treatment and patient preference are considered.

Strengths of the study include prospective design, standardized dosing, validated scoring tool (MRS), and inclusion of all 11 menopausal domains.

Limitations include relatively small sample size, short follow-up, and reliance on self-reported symptom scoring, which can introduce subjectivity.

Clinical implications of this study highlight that:HRT remains the gold standard for severe vasomotor and urogenital symptoms.

Phytoestrogens serve as a reasonable, safer alternative for mild–moderate symptoms.

MRS is an effective tool for monitoring response to both therapies.

VI. Conclusion

Both HRT and phytoestrogens significantly improved menopausal symptoms.
HRT produced faster and greater relief, especially in vasomotor & urogenital domains.
Phytoestrogens offered safe, effective alternative for milder symptoms.
Treatment choice should be individualized based on symptom severity, risks, and preference.

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