

Impact of Hormone Balancing Diet Therapy on Serum Estrogen and Menstrual Cycle Length of Menopause Women

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Abstract

Menopause is a natural physiological event of a women's life. During this transition, women experience several menopause symptoms, especially abnormal menstrual cycles and other endocrine changes occurs due to lack of female hormones: estrogen and progesterone. Isoflavones are phytoestrogens present abundant quantities which are biosynthesized in plants like soybean behave as mammalian estrogen, binds to the estrogen receptors and acts on the target cells and functions had a beneficial effect of Quality of life. In the present study, hormone balancing soy-based diet is formulated and analyzed its impact on anthropometric (body weight, waist-hip ratio), serum estrogen and menstrual cycle length. Clinical practices of this formulation helped hormones relief and resulted in significant differences ($P < 0.05$) in body weight, WHR, serum estrogen levels and menstrual cycle length in the experiment group. Nutritional therapy enriches the hormones and enhances the Quality of life during and after the menopause transition.

Keywords - Menopause, hormone-balancing diet, estrogen, menstruation

I. INTRODUCTION

Menopause is a normal physiological process in every female life, usually begins between 45 to 55 years. The transition starts from perimenopause through menopause to postmenopause stages. There is some epidemiological survey suggest that approximately 10% of women approaching perimenopause transition in their early 30's, results in irregular vaginal bleeding as a first sign. During the menopause transition, hormone levels begin drops and called as perimenopause had experienced the irregular menstrual cycle and endometrium changes. Majority of menopause women complain many symptoms like the irregular menstrual cycle, breast tenderness, mood swing, memory difficulty, sleep disturbance, weight gain and other complications.

Menstruation is a part of the menstrual cycle, which sheds the endometrium lining of the uterus.

Hormones like estrogen and progesterone are responsible throughout the menstrual cycle and Endometrium changes. However, hormone imbalance around menopause transition causes irregular periods i.e: changes in blood flow, appears as clots (massive) or spotting. The cellular growth involved in endometriosis without symptoms but it can be painful. This chronic endogenous estrogen stimulation and inadequate progesterone levels lead to endometrial thickness. Increased endometrial thickness is associated with endometrial hyperplasia & an increased risk of endometrial carcinoma, and medical care is mandatory.

The Effect of the menopausal transition is complex and includes changes in physical, psychological, personal Quality of life. Very little information exists about Quality of life of menopause women in developing countries. In the early stage of the menopause transition, abnormal hormones: estrogen and progesterone levels, spontaneously effect on ovulation and changes in the menstrual cycle. Diet therapy plays a major role in postponing or prevention of menopause symptoms. However, diet therapy had no side effects and had a beneficial role in maintaining good Quality of life during the menopause transition period. The main objective of the study was to investigate the impact of hormone balancing diet therapy on serum estrogen, menstrual cycle and endometrium thickness.

II. MATERIALS AND METHODS

A. Participants

In this quasi-experimental study, menopause women aged 40-50 years are selected to assess their Quality of life. The sample was included 150 middle-aged women who were selected by random sampling method. Inclusion criteria included age between 40-50 years having menopause complications at least irregular menstrual cycle.

B. Materials used

During the menopause transition period, the female hormone will be fluctuating up and down. Hormone balancing diet helps the body to adjust easily and comfortably to the hormonal changes to undergo a smooth menopause journey. Hormone



balancing diet is particularly important at all certain stages of the menopause transition period. A hormone-balancing diet includes phytoestrogen-rich: soy (25gm/d) isoflavone, omega 3 fatty acids, fresh fruits and vegetables, calcium at least 1200mg per day, vitamin D at least 600-1000 IU per day, whole grain, dietary fibre at least 25gn/d with regular physical activity plays an important role in maintaining or smooth menopause journey.

C. Methods used Specific information:

Ageing is associated with the harmful changes in the female body composition. Height, Weight, Body Mass Index was assessed to know the influence on both generic and environmental factors. A set of the questionnaire is designed to assess the menstrual pattern of the study participants; the chemiluminescence Immunoassay (CLIA) method is used to investigate the serum estrogen levels.

D. Statistically analysis

All data were collected, tabulated, analyzed by using SPSS computer application software for statistical analysis. Percentage, frequency, mean, standard deviation, chi-square, paired t-test are used to estimate the statistically significant differences.

III. RESULTS

The results of the present study were represented under the following headings as socio-demographic characteristics, anthropometric measurements, serum estrogen level and menstrual cycle length. The total sample is divided equal sample as an experimental and control group.

A. Socio-demographic characteristics

Table No:1 illustrates the socio-demographic characteristics of the total study participants. The mean age of the participants was 44.7 years. Whereas 53.3 % were 40-45years and 46.7% are in 46-50years.

Table No:1 socio demographic characteristics

Variables		Frequency	Percentage
Age	40-45y	80	53.3%
	46-50y	70	46.7%
Occupation	Housewife	101	67.3%
	Working	49	32.6%
Education	Illiterates	45	40.0%
	Primary	16	10.7%
	Middle	40	26.7%
	Metric	14	9.3%
	2+3	12	8.0%
	pg	08	5.33%

In relation to occupation, 67.3% were housewives, and 32.6% were working women. Majority of the participants are in illiterates 40.0%, followed by middle 26.7%, primary education 10.7%, metric 9.3%, 2+3 were 8.0%, and 5.33% were pg respectively in the study population.

B. Assessment of Anthropometric measurements:

The menopause transition is associated with harmful changes in Bodyweight, Body mass index, waist-hip ratio. The mean height of the respondents of the experiment group was 158.03±7.31cms, and control group were 161.92±5.62cms.

Table no:2 anthropometric measurements

Parameter	Study Type	Initial Data	Final Data	Mean Change %	P-Value
Weight	Experiment	75.57±17.5	68.81±12.47	↓8.95	0.000
	control	80.26±10.33	78.12±9.88	↓2.73	0.010
Body Mass Index	Experiment	30.16±7.19	27.67±5.43	↓8.25	0.000
	control	30.17±4.81	29.97±4.28	↓0.66	0.045
Waist/hip ratio	Experiment	0.90±0.46	0.89±0.02	↓1.11	0.000
	control	0.89±0.27	0.88±0.36	↓0.01	0.780

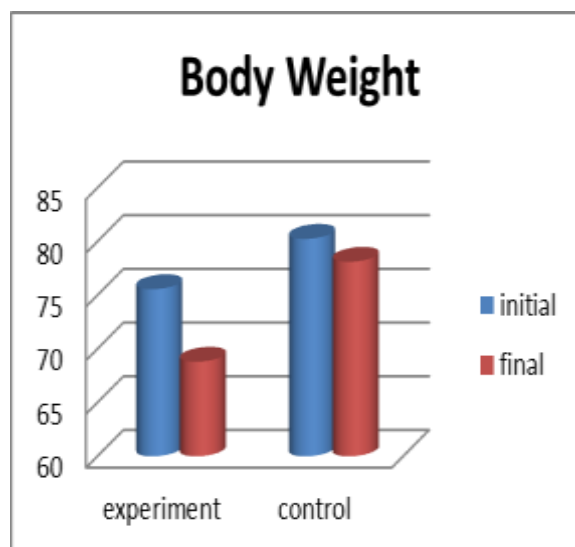


Fig no:1 represents the bodyweight of the experiment and control group.

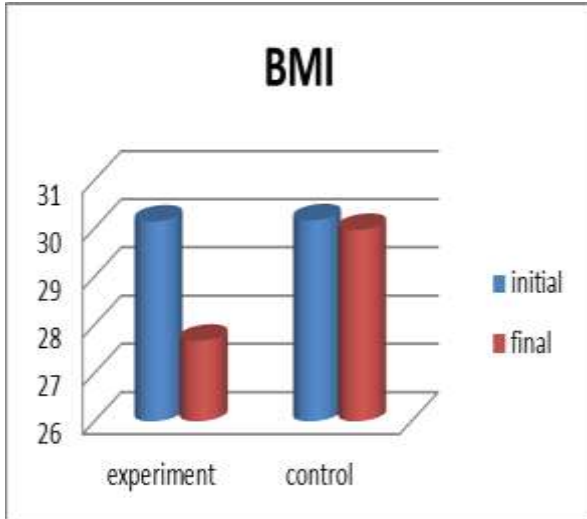


Fig no:2 represents the body mass index of the study participants of both experiment and control groups.

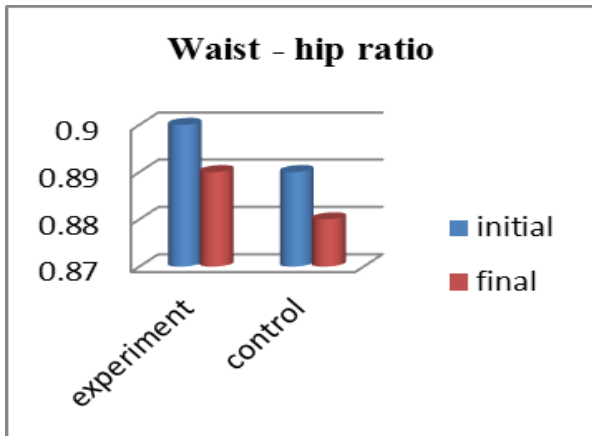


Fig no:3 represents the waist-hip ratio of the study participants of both experiment and control groups.

The mean initial and final Body Weight of the participants in the control group is 80.26 ± 10.3 kgs, and 78.12 ± 9.88 kgs had a mean drop of 2.66%. In contrast, in the experimental group, the mean initial and final body weight are 75.57 ± 17.5 kgs, and 68.81 ± 12.47 kgs had a mean drop of 8.95% respectively.

The mean initial and final Body Mass Index of the experimental group were 30.16 ± 7.19 kg/m^2 and 27.67 ± 5.43 kg/m^2 respectively had a mean drop of 8.25%. In contrast, in the control group, the mean initial 30.17 ± 4.81 kg/m^2 and final 29.97 kg/m^2 had a mean decline of 0.66% was observed. The respondents participated in the study were able to loss their body weight and Body mass index during the study period, When paired t-test was done, a significant difference ($p < 0.05$) was observed in changes on body weight and body mass index between both control and experimental group. However, a substantial reduction in body weight and body mass index was noticed in hormone balancing diet with soybean consuming subjects ($p < 0.05$) when compared to the control group. A small and statistically significant decrease in waist-hip ratio was

noticed and had a mean change of initial 0.90 ± 0.46 cms and final 0.89 ± 0.2 cms in the experimental group. In contrast, in the control group, a mean change of initial 0.89 ± 0.27 cms and final 0.88 ± 0.36 cms was observed. When a paired t-test was done, a marginally significant reduction ($p < 0.05$) was observed in the experimental group.

C. Assessment of serum estrogen and menstrual cycle length

Table no: 3 presents the mean distributions of serum estrogen concentrations in experiment and control groups. In the experiment group, a mean rise of 4.62% was observed from baseline 99.8 ± 60.47 to final 104.41 ± 60.25 showed significant differences. In contrast, in the control group a mean drop of 2.81% was observed from baseline 101.79 ± 58.88 to final 98.98 ± 57.37 respectively. Paired t test showed a significant differences ($p < 0.05$) in the experiment group when compared to the control group.

Study Type	Initial Data	Final Data	t test	P value
Experiment	99.8 ± 60.47	104.41 ± 60.25	-1.256	0.021
Control	101.79 ± 58.88	98.98 ± 57.37	0.676	0.500

Table no: 3 serum estrogen levels

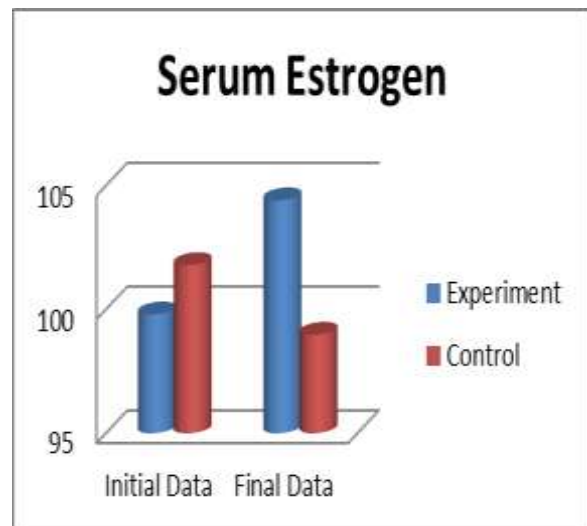


Fig no: 4 presents the serum estrogen levels of the experiment and control groups of the study population.

D. Menstrual Cycle Length from baseline to the post interventions

Below table represents the changes in menstrual cycle length from baseline 0th month to the post interventions between the experiment and control group. There was a significant differences in the changes in average menstrual cycle length in the both groups. A statistically significant differences ($p < 0.05$) was observed in the experimental group when compared with the control group. In addition, participants on hormone balancing diet with soy consuming group had a greater significant in the average menstrual cycle length in the study participants.

Cycles	Experiment		Control	
	Mean \pm SD	P Value	Mean \pm SD	P value
0	20.95 \pm 6.74	0.961	22.29 \pm 7.31	0.504
1	22.01 \pm 6.08	0.449	22.18 \pm 6.01	0.108
2	23.11 \pm 6.56	0.006	24.16 \pm 3.56	0.061
3	25.61 \pm 3.01	0.051	25.24 \pm 3.76	0.059
4	27.70 \pm 3.73	0.154	27.07 \pm 6.62	0.644
5	27.51 \pm 2.40	0.041	27.56 \pm 1.56	0.071
6	28.24 \pm 5.63		26.61 \pm 3.01	

Table no: 4 effect of hormone Balancing diet therapy on menstrual cycle length in both groups

IV. DISCUSSION

Menopausal complication are substantial, since women virtually spend a 1/3rd of their lives in the menopause transition. The influence of estrogen deficiency in the patho- biology of obesity associated with metabolic diseases which is emerging as a plausible therapeutic challenge in the clinical gerontology. During menopause, ovaries produce less estrogen and body tries to compensate by making the body fatter. Menopause substantially affects health related quality of life. Menopause transition induced estrogen deficiency results in an abnormal changes in abdominal fat or body weight and a increases in lean mass which contribute to an elevated risk of CVD and other metabolic disorder. Diet therapy had a lowest side effects helps in the prevention and management of menopausal obesity related to hormone replacement therapy. Soy is a traditional Asian diet and also a rich source of plant estrogen is one of the major phyto estrogen, unsaturated fat, dietary fiber which has a potential role on fat mass reduction and weight control. Previous studies concluded that both the menopausal

or aging effects independently influence the increments of general obesity and the tendency of central obesity fat accumulation in women during menopause transition. In comparison with the premenopausal women, the postmenopausal women had worsened cardiovascular disease risk factors, which were mediated by the independent effects of age, menopause and especially central fat distribution.(C-J Change et al., 2000). In the present study the mean changes of body weight and Body mass index from baseline to post interventions. A mean drop of 8.25% and 0.66% of BMI was observed in the experiment and control groups respectively. There was a significant reduction ($p < 0.05$) was noticed in the experiment group.

Study results analyzed that the mean changes of serum estrogen indicators showed a significant differences in the two groups. However, in comparison with baseline values, mean increase 4.62% after 6months of interventions in the experiment group. In addition, there was a mean decrease of 2.81% was observed in the control group. When Paired t test was conducted a significant improvement ($p < 0.02$) was noticed for estrogen levels in the experiment group. Similar study by Nagi B Kumar had investigated to evaluate the effectiveness of dietary supplement of isoflavones 40mg per day in producing a change in steroid hormones among 25 to 55 years premenopausal women findings suggest that increased isoflavone intake affects estrogen metabolism. 5.85% and 55.56% of Serum free estradiol and estrone levels moderately decreased in the experiment group when compared with 37.5% and 42.86% in the placebo group. In the present study, a significant differences ($p < 0.05$) was observed in the changes in menstrual cycle length and the follicular phase in the both groups. However, in soy consuming group noticed a significant differences ($p < 0.05$) in menstrual cycle length was noticed. Clinical practice of Hormone balancing soya based diet enriches the hormone and helps to enhance the middle age women Quality of life.

V. CONCLUSION

Nutritional therapy had a lower side effects and had a high beneficial to manage menopause symptoms as well as help to maintain good Quality of life during menopause transition period.

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