Research Article

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EFFECTS OF SOYA MILK ON MENOPAUSAL SYMPTOMS AMONG WOMEN RESIDING IN SELECTED RURAL COMMUNITY, BENGALURU, INDIA

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ABSTRACT

Menopause is a natural event associated with gradual reduction of estrogen production. Decrease level of estrogen cause physical, psychological and urogenital symptoms among women. Soya bean contains phytoestrogen which are similar to the hormone estrogen. Soya milk is derived from soya bean, helps to relieve menopausal symptoms. The present study used an evaluative approach with true experimental pre-test post-test control group design to evaluate the effects of soya milk on menopausal symptoms among women. Sample comprised of 125 health postmenopausal women who met inclusion criteria by purposive sampling methods and were randomized in to experimental (n=63) or the control group (n=62).Data was collected using demographic proforma, and Menopausal Rating Scale (MRS). Experimental group was given daily supplements of 200 ml of homemade soya milk for the period of six weeks. Control group participants did not receive any intervention. Data collected was analyzed based on the objectives and hypotheses of the study. Study results revealed that an experimental group who received soya milk shows significant difference in the reduction in MRS score ($p<0.001$).

Key words: menopausal symptoms, Soya milk, postmenopausal women

INTRODUCTION

Women are vital set-up and heart of the family. At some point after 40's, a woman enters into the third phase of her life that is middle age peiod[1-2]. Menopause is an important event occurs during middle age period when reproductive capacity ceases[3]. Postmenopause is the permanent cessation of menstruation due to loss of ovarian follicular activity followed by 12 months of consecutive amenorrhea[4]. Gradual reduction in hormone estrogen cause physical and psychological discomforts like hot flushes, night sweats, sleep disturbances, dry skin, itchy skin, hair loss, weight gain, joint and muscle pain, urinary incontinence, vaginal dryness, painful sexual intercourse, loss of sexual interest, mood swings, and anxiety[5-6]. Menopausal symptoms affect 70% of women approaching menopause[7-9]. Hormonal replacement therapy is useful to reduce the intensity of menopausal symptoms[10] but it cause side effects and increasing risk of endometrial and breast cancer[11]. Plants have a wide range of pharmacologically effective phytochemicals. Many of these have been discovered to be really helpful for the treatment of a variety of human diseases[12]. Phytoestrogen is planthormones that are structurally and functionally similar to 17β-estradiol. A soya bean (Glycine max) contains phytoestrogen known as isoflavones such as daidzain and genistein[13]. It has a lot to offer postmenopausal women[14]. Soya milk is prepared from whole dry soya bean is more cost effective to reduce the intensity and severity of menopausal symptoms. Since there is considerable lack of awareness about the effects and treatment of menoapusal symptoms among Indian women, especially among rural women in India. Hence the researcer intended to conduct a study on effects of soya milk on menopausal symptoms among women residing in rural community.

Objectives: The study objective is to evaluate the effects of soya milk on reduction of the menopausal symptoms among women as measured by Menopausal Rating Scale (MRS)

Hypothesis: There will be a significant change in reduction of menopausal symptoms among women receiving soya milk than those who do not.

METHODS AND MATERIALS

An evaluative approach with true experimental pre-test post-test control group design was used. The study was conducted in rural community villages, under Kannamangala Rural Health Training Centre (RHTC), Bengaluru. The study inclusion criteria were(a)women aged between 40- 60 years (b) having natural menopause associated with no menstrual bleeding in the last 12 months (c) has MRS cut off score11 or above (d) give consent to participate in the study (e) can speak and understand Kannada (e) available at the time of data collection. Women who have surgical menopause, receiving hormonal therapy, taking dietary soya product on regular basis and having psychological and medical disorders were excluded. Sample size was 125 healthy postmenopausal women selected using purposive sampling techniques and they were randomized into control and experimental group (62+63) using computer generate random order. A brief questionnaire was used to identify the women eligibility criteria. A semi-structured interview schedule was used to collect baseline data's. Menopausal symptoms severity was assessed by Menopausal Rating Scale (MRS). MRS is a 11-items paper pencil test with 5 point scale from none, mild, moderate, severe and very severe and has scores 0-4 accordingly. The study was conducted after getting the written approval from Institutional Ethical Committee of Saveetha University (009/01/2015/IEC/SU) and

Vydehi Institute of Medical Sciences (VIEC/2015/APP/097). Every woman was informed about study purpose, the proposed intervention and its benefits, and duration of the study period. Informed consent was obtained. An experimental participant was given 200ml of homemade soya milk daily morning for the period of six weeks. Soya milk sample has been sent to Centre for Advanced Research in Indian System of Medicine (CARISM) for biochemical analysis to check the parameters like soya milk appearance, identification related to isoflavone and presence of protein. Post-test data was collected after 6 weeks of intervention and follow-up was done at 10^{th} week. Control group participants did not received any intervention. Finally, a total of 59 postmenopausal women in experimental group and 57 postmenopausal women in control group were analyzed. There were 4 drop outs in experimental group and 5 drop outs in control group. The reason was not willing to continue due to health and family issue.

Statistical Analysis

The results are presented in mean, standard error (SE), frequency and percentages. The paired t test is being used to compare the menopausal symptoms within the groups, unpaired t test used to compare the menopausal symptoms between the groups. The repeated measure ANOVA used to the comparison of means from pretest to follow up of control and experimental groups. The p value <0.005 is being considered as significant. All the analysis is carried out by using Statistical Package for Social Sciences (SPSS) 16.0 version.

RESULTS

Frequency distribution of participants according to demographic data

The data presented in table 1 shows description of participants according to the demographic data. There was no significant association between experimental and control group.

Effectiveness of soya milk on total MRS score among post-menopausal women

The data presented in table 2 shows that the control group pretest mean±SE was 16.0±0.385, posttest mean±SEwas 16.035±0.374 and follow-up mean±SE was 15.895±0.329. Whereas in experimental group pretest mean±SE was 15.814±0.403, posttest mean±SE was 14.525± 0.371 and it was decreased in follow- up i.e., mean±SE 13.068±0.366. The unpaired t value in posttest (2.407) (p=0.017) and follow-up (4.97) (p <0.001) and the paired t value of all three phases (pretest to follow-up) within experimental group (p<0.001) was found significant, indicating a statistically significant difference in total MRS score among postmenopausal women in the experimental group compared with control group. The repeated measures ANOVA of the control group (0.50), (p=0.579) and the experimental group (181.122), (p<0.001) showed significant difference with Dunn's multiple comparison. It was found significant with pretest and follow-up in experimental group.

Table 1: Distribution of participants according to the demographic variable N=116

SN	Demographic Variable	Control group (n=57)		Experimental group(n=59)		Chi Square	P value
		f	%	f	%		
1	Age (in years)						
	40-46	17	29.82	14	23.73		
	47-53	31	54.39	35	59.32	0.551	0.75
	54-60	9	15.79	10	16.95		
2	Marital status						
	Married	57	100	59	100	0.009	0.924
3	Religion						
	Hindu	49	85.96	51	86.44		
	Muslim	4	7.02	05	8.47	0.01	0.99
	Christian	4	7.02	03	5.08		
4	No. of child birth						
	1	05	8.77	08	13.56		
	2	32	6.14	35	59.32	0.618	0.892
	3 and above	20	35.09	16	27.12		
5	Education						
	Primary	31	54.39	29	49.15		
	Secondary	19	33.33	22	37.29	0.318	0.853
	Undergraduate	07	12.28	08	13.56		
6	Occupation						
	Home maker	40	70.18	44	74.58		
	Coolie	17	29.82	15	25.42	0.281	0.596
7	Family monthly income						
	Below 5000	03	5.26	02	3.39		
	5001-10000	19	33.33	21	35.59	0.28	0.869
	10001 and above	35	61.40	36	61.02		
8	Dietary lifestyle						
	Vegetarian	24	42.11	15	25.42	3.615	0.057
	Mixed diet	33	57.89	44	74.58		
9	Sexually active						
	Active	41	71.93	37	62.71	1.118	0.29
	Inactive	16	28.07	22	37.29		
10	Awareness about menopause						
	Yes	57	100	59	100	0.009	0.924
11	Years spend in menopause						
	Less than five years	48	84.21	48	81.36	0.166	0.683
	More than five years	09	15.79	11	18.64		

Table 2: Pretest, posttest and follow-up Total MRS score of the participants in control group and experimental group

Parameter	Group		Mean ± SE	Significance paired 't' test			Significance Unpaired 't' test			Significance Repeated measures ANOVA	
				PrT & PoT	PoT & FwU	FwU & PrT	Con PrT -Exp PrT	Con PoT -Exp PoT	Con FwU - Exp FwU	Con	Exp.
Total MRS	Con	Pretest	16.000± 0.385	0.256 P=0.799	1.134 P=0.262	0.609 P=0.545	0.334 p=0.739	2.407 P=0.018	4.970 p<0.001	0.500 p=0.579	181.22 p<0.001
		Posttest	16.035± 0.374								
		Follow up	15.895± 0.329								
	Exp	Pretest	15.814± 0.403	12.904 p<0.001	10.445 p<0.001	15.098 p<0.001					
		Posttest	14.525± 0.371								
		Follow up	13.068± 0.366								

Con-control group; Exp-experimental group; PrT-Pretest; PoT-Posttest; FwU-Followup

DISCUSSION

Hot flashes are experienced in those periods of the female life when estrogen levels are low[15]. Isoflavone reduces hot flashes, but its real mechanism of action is not known. One possible explanation for isoflavone effect on menopausal symptoms is through its action on the estrogen receptor, which is capable of binding several structurally diverse compounds such as natural oestrogens and isoflavones[16]. Finally, estradiol enhancement of the isoflavone-group patients suggests that isoflavone supplementation increases estrogen levels. It may have an indirect effect due to isoflavone acting on sex hormone-binding globulin[17]. Regular intake of dietary soya is the best way to prevent and alleviate menopausal symptoms. Consuming soya milk may be potentially useful and safe[18-21]. The present study reveals soya milk was effective on reduction of total MRS score especially effective reduction were observed on vasomotor symptoms of menopausal rating scale. A study done by Garcia-Martin[22]reported that there was an improvement in somatic domains of MRS (P=.015) and there were no significant differences in another domains of MRS. In conclusion soya milk is a nutritious drink, which is made from soaking, grinding and boiling them with water. Soya milk preparation at home is cheaper and healthier. Also soya milk supplementation was quite palatable and extremely well tolerated by women.

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