Efficacy of simplified Kundalini yoga practices on low-density lipoprotein and high-density lipoprotein among Middle-aged menopausal women

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Abstract---To achieve the aim of the study, 120 middle-aged menopausal women from Chennai city between the ages of 40 and 50 were randomly selected, 40 of them were screened, and they were divided into two groups of 20 subjects each. Before the start of the training program, preliminary tests were carried out for the two groups on the selected dependent variables. The experimental group received Sky Yoga practices for 60 minutes for six days for a total of twelve weeks. The control group was allowed to go about their routine and normal lifestyle with no specific training. After twelve weeks, both groups were retested for the same selected dependent variable, Low Density Lipoprotein and High Density Lipoprotein). Analysis of covariance (ANOVA) was used to find the significant difference between the experimental group and the control group. The significance test was set at a confidence level of 0.05

Keywords---Simplified Kundalini Yoga, Low Density Lipoprotein, Total Cholesterol, Menopause.

Introduction

Menopause is a natural aging process during which a woman transitions from the reproductive to the non-reproductive years. Although menopause is a physiological process, it is associated with several conditions such as loss of bone
mineral density, thinning and drying of the skin, and vasomotor episodes. In addition to psychological changes, menopause leads to so many health risks such as obesity, blood pressure and type 2 diabetes. Yoga as a way of life is the blessing of our ancestors to solve not only menopause but also all other diseases. Yogic life leads us gently and peacefully to well-being.

**Objectives of the study**

To find out if there is a significant difference between diet and no-nutrition Sky Yoga practices in middle-aged women suffering from menopausal symptoms in terms of bio Chemical Variables.

**Significance of the problem**

Menopause is a very serious matter that should not be taken lightly. Menopause can affect women physically, mentally, and emotionally. Sky yoga practices play an important role in overcoming menopause problem in women.

**Hypothesis**

It is hypothesized that there would be significant differences in selected risk factors in menopausal women due to sky yoga practices than in the control group.

**Delimitations**

1) The study would only be limited to menopausal women in the city of Chennai.
2) The age of the subjects would only be limited to 40 to 50 years.
3) The subjects would only be menopausal women.
4) The independent variables would only be selected sky yoga practices.
5) The dependent variables would be limited to physiological variables only.

**Limitations**

1) The medically treated people would be restricted.
2) The factors such as environment, climatic conditions and socio-economic status are not to be taken into account.
3) Certain factors such as lifestyle, body structure, personal habits and motivational factors are not intended to be considered for this study

**Methodology**

To achieve the aim of the study, 120 middle-aged women with menopausal symptoms from the city of Chennai, aged between 40 and 50 years, were randomly selected, 40 of them were screened and divided into two groups of 20 subjects each. Before the start of the training program, preliminary tests were carried out for the two groups on the selected dependent variables. The experimental group was given six days of 60-minute sky yoga practices for a total of twelve weeks. The control group was allowed to go about their routine and
normal lifestyle without any special training. After twelve weeks, both groups were retested for the same selected dependent variable, BMI (Body Mass Index) and systolic blood pressure. Analysis of covariance (ANCOVA) was used to find the significant difference between the experimental group and the control group. The significance test was set at a confidence level of 0.05.

**Results on low density lipoprotein**

The Analysis of Co-variance (ANOVA) on sky yoga practices and Control Group was analysed and presented.

<table>
<thead>
<tr>
<th>Test</th>
<th>Simplified Kundalini Yoga Group</th>
<th>Control Group</th>
<th>Source of Variance</th>
<th>df</th>
<th>F  Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test</td>
<td>136.73</td>
<td>148</td>
<td>between</td>
<td>1.00</td>
<td>0.22</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>within</td>
<td>38.00</td>
<td></td>
</tr>
<tr>
<td>Post test</td>
<td>112.80</td>
<td>160.27</td>
<td>between</td>
<td>1.00</td>
<td>96.80</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>within</td>
<td>38.00</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>28.74</td>
<td>21.63</td>
<td>between</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>within</td>
<td>37.00</td>
<td></td>
</tr>
</tbody>
</table>

* Significant at 0.05 level of confidence. (The table value required for significance at 0.05 with df 1 and 38 and 1 and 37 are 4.20 and 4.21 respectively)

The F value obtained with pretest results of 0.22 was less than the required F value of 96.80 to be significant at the 0.05 level. This proved that there was no significant difference between the pre- and post-test groups and the pre-test randomization was the same. Analysis of the results after the test proved that there was a significant difference between the groups as the F-value obtained of 96.80 was greater than the required F-value of 4.21. This proved that the differences between the subjects’ post-test means were significant. The result is substantiated by Vyas R Raval K N as given below.

**Vyas R, Raval KV, Dikshit 2008** Oct-Dec;52(4):420-4. PMID: 19585761. Coronary artery disease is an important cause of death and disability in older women. The modification of the lipid profile lowers the risk of coronary artery disease. Yoga and transcendental meditation are said to have cholesterol-lowering effects. This study was designed to evaluate the effect of Brahmakumari Raja Yoga meditation, which is very easy to practice, on serum lipids in normal Indian women. 49 normal female volunteers were the subjects. They were divided into premenopausal (n=23) and postmenopausal (n=26) groups. They were further divided into non-meditators (who had never meditated), short-term meditators (meditating for 6 months to 5 years), and long-term meditators (meditating for more than 5 years). The lipid profile was assessed using their respective reagent sets. Serum cholesterol, triglyceride, and low-density lipoprotein cholesterol in non-meditators were significantly higher in postmenopausal women compared to premenopausal women. Serum cholesterol and low-density lipoprotein cholesterol
were significantly decreased in both short- and long-term meditators compared to non-meditators in postmenopausal women. No significant difference in lipid profile was observed in premenopausal women. Raja yoga meditation lowered serum cholesterol and low-density lipoprotein cholesterol in postmenopausal women, thereby reducing their risk of coronary artery disease.

![Low Density Lipoprotein Graph](image)

**Figure I.** Bar diagram on mean and analysis of covariance of low-density lipoprotein of experimental and control group

**Significant at 0.05 level of confidence.** *(The table value required for significance at 0.05 with df 1 and 38 and 1 and 37 are 4.20 and 4.21 respectively)*

The results of the study on the selected biochemical variables showed that group 1 has significant differences on Low Density Lipoprotein, due to yogic practices. Hence, the hypothesis was accepted at 0.05 level of confidence.

**Results on Total Cholesterol**

The Analysis of Co-variance (ANOVA) on sky yoga practices and Control Group was analysed and presented.

**Table II**

<table>
<thead>
<tr>
<th>Test</th>
<th>Simplified Kundalini Yoga Group</th>
<th>Control Group</th>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test</td>
<td>146.60</td>
<td>148.47</td>
<td>between</td>
<td>26.13</td>
<td>1.00</td>
<td>3.06</td>
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<td></td>
<td>within</td>
<td>2237.33</td>
<td>38.00</td>
<td></td>
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<tr>
<td>Post test</td>
<td>138.53</td>
<td>150.27</td>
<td>between</td>
<td>1032.53</td>
<td>1.00</td>
<td>14.36*</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>within</td>
<td>2012.67</td>
<td>38.00</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>42.41</td>
<td>31.04</td>
<td>between</td>
<td>791.29</td>
<td>1.00</td>
<td></td>
</tr>
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<td></td>
<td></td>
<td>within</td>
<td>750.66</td>
<td>37.00</td>
<td></td>
</tr>
</tbody>
</table>
Significant at 0.05 level of confidence. (The table value required for significance at 0.05 with df 1 and 38 and 1 and 37 are 4.20 and 4.21 respectively)
The F value obtained with pretest results of 3.06 was less than the required F value of 14.36 to be significant at the 0.05 level. This proved that there was no significant difference between the pre- and post-test groups and the pre-test randomization was the same. Analysis of the results after the test proved that there was a significant difference between the groups as the F-value obtained of 14.36 was greater than the required F-value of 4.21. This proved that the differences between the subjects' post-test means were significant. The result is substantiated by Heather Currie, Christine Williams

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There has been some interest in specific dietary methods for lowering cholesterol, with a variety of foods containing compounds that have been shown to have LDL-cholesterol lowering properties. Active ingredients include plant sterols/stanols (added to foods like margarine, dairy, and yogurt), beta-glucan (a soluble fiber found in oatmeal), and soy protein (found in soy-based products). In the case of beta-glucan, the ingredient in oat-based cereals, the evidence supports a cholesterol reduction in the range of 25% when 35g of beta-glucan is consumed daily. Consuming 25g of soy protein per day as part of a low-fat diet has been shown to lower cholesterol levels by 35%. However, one of the most effective ways to lower LDL cholesterol levels through dietary changes is to include plant sterols, or stanols, in your diet. Plant sterols and stanols lower LDL cholesterol levels by blocking the absorption of dietary cholesterol during digestion and also the re-absorption of cholesterol from the liver. It is believed that taking 22.5 g of plant sterols per day reduces LDL cholesterol by an average of 10% within two to three weeks. When combined with a healthy diet and lifestyle, LDL cholesterol can be reduced by an additional 5%.15 Plant sterols and stanols have no effect on HDL cholesterol or triglycerides. Medications such as statins may be required in some women, and plant sterols and stanols may be used in conjunction with lipid-lowering medications. The 10% cholesterol reduction provided by plant sterols adds to a healthy cholesterol-lowering diet and cholesterol-lowering medications such as statins and fibrates CVD is by far the leading cause of death in postmenopausal women and yet there is still a low level of awareness among both women and their families health professions. Because the changes that occur during menopause lead to an increased risk of cardiovascular disease, the menopause discussion should include assessment of risk factors for long-term health problems, particularly osteoporosis and cardiovascular disease; Routine measurement of cholesterol levels, blood pressure and body mass index should also be considered. When indicated, the focus should be on nutrition and lifestyle advice.
Figure II. Bar diagram on mean and analysis of covariance of total cholesterol of experimental and control group

**Significant at 0.05 level of confidence. (The table value required for significance at 0.05 with df 1 and 38 and 1 and 37 are 4.20 and 4.21 respectively)**

The results of the study on the selected biochemical variables showed that group 1 has significant differences on total cholesterol, due to yogic practices. Hence, the hypothesis was accepted at 0.05 level of confidence.

**Conclusion**

With the above training, it is clearly proven that yoga practices lower Low Density Lipoprotein and Total Cholesterol in middle-aged menopausal women. Hence Hypothesis was accepted at 0.05 level.

**References**