CHAPTER – 5

SUMMARY AND CONCLUSION

5.1 INTRODUCTORY STATEMENT

In creation of this beautiful world God send women on this earth with precious blessing of motherhood by virtue of reproductive power, a woman gives birth to the nation’s future strength to balance the pressure of population on this earth. Nature itself has a phenomenon of life designated as menopause irrespective of nation, region, caste etc. Some biochemical and biophysical changes take place during this crucial age.

Menopause is a term used to describe the permanent cessation of the primary functions of the human ovaries the ripening and release of ova and the release of hormones that cause both the creation of the uterine lining. Menopause typically (but not always) occurs in women in midlife, during their late 40s or early 50s and signals the end of the fertile phase of women's life. The term post menopause is applied to women who have not experienced a menstrual bleed for a minimum of 12 months, assuming that they do still have a uterus, and are not pregnant or lactating. In women without a uterus, menopause or post menopause is identified by a very high FSH level. Thus post menopause is all of the time in a women's life that take place after her last period, or more accurately, all of the time that follows the point when their ovaries become inactive.

This stage of life becomes very stressful. Stress influence health and disease and is the main reason for early ageing. Now a day’s stress has become an integral part of day to day life style. Stress isn’t always bad in small aloses, it can help you perform under pressure and motivate you to do your best. But when you are constantly working under stress your mind and body pays the price.
Summary and Conclusion

The elderly are at a risk of poor nutrition due to economic pressure, poor dentition, reduced mobility, depression, loneliness, aging tissues and inadequate food consumption. It is a condition associated with disease like obesity, diabetes, heart disease, hypertension, arthritis, osteoporosis, gout, cancer and life style is also one of the factors which aggravate these problems.

Keeping the importance of post menopause present study is aimed to assess lipid profile and nutritional status of postmenopausal women in relation to their stress level.

5.2 METHODOLOGY

5.2.1 Aims and Objectives

- To assess the nutritional status, health status and life style pattern of post menopausal Women.
- To assess the association between some factors of nutritional status, health status and life style pattern with stress level of post menopausal women.

5.2.2 Hypothesis

Following null hypothesis have been set to draw statistical inferences -

1. There shall be no significant difference in nutritional status, health status and life style pattern of post menopausal women.
2. There shall be no significant association between some factors of nutritional status, health status and life style pattern with stress level of post menopausal women.

5.2.3 Material and Methods

- **Sampling technique:-** The present study was carried out on 200 Post menopausal women aged 40-70 years. Samples were selected by
purposive sampling method. The study was conducted in following hospitals:

a) Sri Aurobindo Institute of Medical Sciences, Indore
b) Bhandari Hospital & Research Center, Vijay Nagar, Indore
c) Medicare Hospital, Ravindra Nagar, Indore
d) Choithram Hospital & Research Center, ManikBagh Road, Indore
e) Dr. Aruna Tiwari’s Clinic, Sadar Bazar Main Road, Indore

- **Tools and techniques:** To determine the nutritional status of post menopausal women, anthropometric measurement like age, height, weight, waist hip ratio and body mass index (BMI) was calculated. Along with that dietary intake of nutrients was also calculated through 24 hours recall method with that food group intake by food frequency questionnaire was calculated. Hemoglobin and serum calcium status was calculated to find out the nutritional status of post menopausal women. To assess the nutritional status of post menopausal women in relation to their stress level weight and energy was considered. Keeping in view that if energy intake increases, weight is directly affected.

To find out health status of post menopausal women lipid profile was investigated. Data related age of menopause and other health problems after menopause like: Hypertension, Obesity, Diabetes, Anemia, Arthritis, Gout in post menopausal women was collected through questionnaire.

Life style pattern of post menopausal women was also observed through physical activity, exercise and meal pattern. Data was collected by questionnaire method.

A combination of Hari’s stress inventory (2009) and Sinha’s comprehensive anxiety test was used for assessment of stress. An anxiety test was categorized in three levels- low anxiety, normal anxiety and high anxiety. After explaining the purpose of the study
consent was taken. A semi structured questionnaire was provided with proper guidance and assistance to samples. They were asked to answer questionnaire to assess the stress level.

5.2.4 Statistical Analysis

The Data was entered into the computer database. The responses of frequencies were calculated and analyzed by using statistical software SPSS version 11.0. Prevalence of an outcome variable along with 95% confidence interval was calculated. The Hari’s stress inventory (2009) and Sinha’s comprehensive anxiety test (SCAT) was analyzed by categorization of the three levels (Low Anxiety, Normal Anxiety and High Anxiety) of stress as presence of stress. The descriptive statistics like mean and standard deviation for different study variables were calculated. Significance of difference in frequency distribution of studied sample have been found out using Chi square and difference in mean has been found out using ‘t’ test.

5.3 RESULTS

5.3.1 Nutritional status

3.1(a) Anthropometric assessment

- **Age:** The probability value of Chi square for association of age with stress was found 20.86 at 10 df which is significant (P < 0.02 two tailed). The mean age of post menopausal women was found 52.97 ± 5.9 years.

- **Height:** ‘t’ value for the significance in mean difference of height of the post menopausal women obtained 350.478 at 199 df which is significant. The mean height of post menopausal women was found 150.95 ± 0.09 cm. 71.0% women were found less than reference height and only 29% were found more than reference height (reference height 154cm).
Summary and Conclusion

- **Weight:** Chi square for association of weight with stress in post menopausal women was 9.50 at 4 df which is significant (P < 0.05 two tailed). The mean weight of post menopausal women was found 56.13 ± 10.97kg. There were only 3% women who had reference weight (55kg). While 48% women were found less than reference weight and 49% had more than reference weight.

- **BMI:** ‘t’ value for the significance in mean difference of BMI of the post menopausal women obtained 73.205 at 199 df which is significant. The mean BMI of post menopausal women was found 24.65 ± 4.76 kg/m$^2$. 46% post menopausal women had normal BMI (18.5-24.99kg/m$^2$). While 8.5% were found with low BMI (<18.5 kg/m$^2$). Alarmingly it was noted that 32% and 13.5% post menopausal were in pre-obese category and on the borderline of obesity respectively.

- **Waist hip ratio:** ‘t’ value for the significance in mean difference of waist hip ratio of the post menopausal women obtained 264.003 at 199 df which is significant. The mean waist hip ratio of post menopausal women was 0.83 ± 0.045. Most of the women 69.5% had reference waist hip ratio while remaining 30.5% had above.(reference waist hip ratio 0.7-0.85)

5.3.1(b) **Food Group Intake**

100% post menopausal women were taking chapattis daily. 25% women were taking rice daily. 56% and 19% were taking rice alternatively and weekly respectively.

Chi value obtained for consumption of pulses in post menopausal women was 109.520 at 1 df which is significant (p<0.005 two tailed). Most of the post menopausal women were taking pulses. 29.5% post menopausal women consumed pulses.
daily, 57.5% and 13% consumed pulses alternatively and weekly respectively.

Chi value obtained for consumption of vegetables in post menopausal women was 21.780 at 1 df which is significant (p<0.005 two tailed). 66.5% and 33.5% post menopausal women consumed other vegetables daily and alternatively respectively. 78.5% consumed roots and tubers daily. 21.5% consumed alternatively. Most of the post menopausal women (64.5%) consumed green leafy vegetables daily.

Chi value obtained for consumption of Milk in post menopausal women was 87.120 at 1 df which is significant (p<0.005 two tailed). 31% and 4.5% women consumed milk alternatively and weekly. 83% post menopausal women consumed milk and milk products daily. And only 17% consumed alternatively.

Chi value obtained for consumption of fruits in post menopausal women was 82.810 at 2 df which is significant (p<0.005 two tailed). 15.5% women were taking fruits daily, 63.5% and 21% were taking fruits alternatively and weekly respectively.

Chi value obtained for consumption of nuts in post menopausal women was 59.710 at 2 df which is significant (p<0.005 two tailed). 16% women were using nuts and oil seeds daily. 25.5% women consumed alternatively and 58.5% consumed weekly.

Chi value obtained for consumption of egg in post menopausal women was 56.180 at 1 df which is significant (p<0.005 two tailed). Only 47 post menopausal women consumed egg. 14.8%, 19.3% and 65.9% post menopausal women consumed egg daily, alternatively and weekly.

88% post menopausal women consumed sugar daily. Only 12% women consumed occasionally.
5.3.1(c) Nutrient intake

- **Energy** :- Most of the postmenopausal women had not consumed calories as per RDA. 81.9% moderate worker consumed calories less than RDA (mean1610.27±358.18kcal/day). 18.1% consumed calories more than RDA (mean2515.76±219.88kcal/day). 64.2% of sedentary worker found to consume calories less than RDA (mean1373.88±289.15kcal/day) and remaining 0.94% found to consume reference calories (1875 kcal). 34.9% consumed calories more than RDA (mean2267.38±334.36kcal/day). The probability value of Chi square for association of calorie with stress was 16.5 at 8 df which is significant (P < 0.05 two tailed). Hence there was an association between calorie consumed and stress in postmenopausal women.

- **Carbohydrate** :- ‘t’ value for the significance in mean difference of Carbohydrate intake of the post menopausal women obtained 272.425 at 199 df which is significant. 91.5% postmenopausal women who were moderate worker had consumed carbohydrate less than RDA (mean267.87±70.94gm/day). 8.5% had consumed carbohydrate more than RDA (mean497.50±40.49gm/day). 89.6% post menopausal women who were sedentary worker had consumed carbohydrate less than RDA (mean 240.04±64.34gm/day) and remaining 10.4% had found to consume carbohydrate more than RDA (mean424±42.74gm/day).

- **Protein** :- ‘t’ value for the significance in mean difference of protein intake of the post menopausal women obtained 48.985 at 199 df which is significant. 44.5% postmenopausal women consumed protein less than RDA (mean38.86±7.113gm). 52% postmenopausal women had consumed protein more than RDA (mean63.90±10.113gm) and remaining 3.5% postmenopausal women had consumed reference protein (50gm/day).
Summary and Conclusion

- **Fat**: ‘t’ value for the significance in mean difference of fat intake of the post menopausal women obtained 47.9550 at 199 df which is significant. Most of the post menopausal women (88%) consumed fat more than RDA (mean52.16±17.18gm/day). 6% consumed fat less than RDA (mean14.25±3.334gm/day). Only 6% post menopausal women consumed fat to reference level (20gm/day).

- **Iron**: ‘t’ value for the significance in mean difference of Iron intake of the post menopausal women obtained 23.985 at 199 df which is significant.70.5% post menopausal women had consumed iron less than RDA (mean18.45±6.80%mg/day). 27.5% consumed iron more than RDA(mean 37.73±6.439mg/day) and remaining 2% had taken reference iron(30mg/day).

- **Calcium**: ‘t’ value for the significance in mean difference of Calcium intake of the post menopausal women obtained 23.985 at 199 df which is significant. Most of the postmenopausal women (83.5%) had consumed calcium more than RDA (mean 772.37 ± 49.421 mg/day) and remaining 16.5% had consumed calcium less than RDA (mean308.58± 49.421mg/day).

5.3.1(d) Clinical Assessment

Chi value obtained for hair was 21.280 at 2 df, and skin was 23.590 at 2 df which is significant (p<0.005 two tailed). 42% and 45.5% post menopausal women had normal hair and skin while loss of luster was found in 40% and 36.5% post menopausal women in relation to their hair and skin. 18% subjects had discolored and dry hair and rough skin.

Chi value obtained for Tongue in post menopausal women was 18.430 at 2 df which is significant (p<0.005 two tailed). Status of tongue of post menopausal women showed that 28.5%, 47% and
24.5% had normal, pale but coated and red and raw tongue respectively.

Chi value obtained for Gums in post menopausal women was 69.640 at 2 df which is significant (p<0.005 two tailed). 60.5% post menopausal had normal gums while 17% and 22.5% had bleeding gum and pyorrhea respectively.

Chi value obtained for Teeth in post menopausal women was 31.210 at 2 df which is significant (p<0.005 two tailed). Status of teeth revealed that 50.5% post menopausal women had normal teeth but 18.5% had flourosis while 31% subjects had caries in their teeth.

Chi value obtained for odema in post menopausal women was 36.980 at 1 df which is significant (p<0.005 two tailed). Odema was present in 28.5% of post menopausal women.

Chi value obtained for Appetite in post menopausal women was 109.520 at 1 df which is significant (p<0.005 two tailed). 87% post menopausal women had normal appetite and anorexia in 13%.

Chi value obtained for Stools in post menopausal women was 71.680 at 2 df which is significant (p<0.005 two tailed). 12% of post menopausal women suffered from diarrhoea& 28% suffered from constipation.

5.3.1(e) Status of Hemoglobin and serum calcium level

‘t’ value for the significance in mean difference of Hemoglobin at 199 df of the post menopausal women obtained was 100.570 which is significant. 58% post menopausal women were found to have mild anemia (mean 9.98 ± 0.67gm %). While 29% had moderate anemia (mean 8.05 ± 0.56gm %). No one had fallen in severe anemia category. Only 13% post menopausal women had normal hemoglobin status (mean11.81±0.37gm %).
‘t’ value for the significance in mean difference of Serum calcium at 199 df of the post menopausal women obtained was 208.543 Which is significant. 90%(mean 8.07±48mg/dl) of post menopausal women found to have less serum calcium level, only 10%(mean 9.10±0.20mg/dl) had normal serum calcium level (reference serum calcium 9-110mg/dl).

5.3.2 Health status

5.3.2(a) Age of Menopause

Almost more than half of the population of post menopausal women (57%) was found to have their menopause at the age of 45-50 years. While 22% had their menopause at the age of 40-45 years. After attaining age of 50 years only 16.5% women had their menopause and very few 4.5% had their menopause at the age of 35-40 years. The probability value of chi-square for association of age of menopause with stress was 5.162 at 6 df which is not significant value (p>0.05, two tailed).

5.3.2(b) Symptoms of post menopause

Chi value obtained for symptoms of post menopause was 33.670 at 2 df which is significant (p<0.005 two tailed). Most of the post menopausal women (43.5%) suffered from the problems of mood swing/hot flashes during menopause and problems of depression/irritability were faced by 14% women during menopause. Both the type of problems mood swing/hot flashes and depression/irritability were faced by 42.5% women during menopause.

5.3.2(c) Health Problems

Most of the post menopausal women suffered from health problems. 17.5% post menopausal women found to be obese and
Summary and Conclusion

42.5%. Were suffering from anemia, 40% women suffered from more than one health problem like Anemia, Obesity, Diabetes, Arthritis, Hypertension, Gout after menopause. The value of Chi-square for association of health problems after menopause with stress was 19.499 at 4 df which is highly significant (p<0.01, two tailed). There was no doubt in confirmation that there was a highly significant association between health problems and stress in post menopausal women.

5.3.2(d) Blood Pressure

30.5% post menopausal women were found to have normal Blood pressure. 35.0% and 34.5% had suffered from hypotension and hypertension respectively. Chi value for association of Blood pressure with stress was 6.83 at 4 df which is not significant (P > 0.05 two tailed). Hence there was not significant association between Blood pressure status and stress in studied subjects.

5.3.2(e) Lipid Profile

- **Cholesterol** - More than half of the post menopausal women (59.5%) were found to have normal cholesterol level (mean176.81±17.47 mg/dl). 40% were found in suspected ranges (mean219.66 ± 13.51 mg/dl) and only 0.5% was found in treatment needed category (270 mg/dl). Chi square was 13.79 at 4 df which is highly significant (P < 0.008, two tailed). There was no doubt in confirmation that there is highly significant association between cholesterol and stress in post menopausal women.

- **HDL** :- All (100%) post menopausal women were found in the suspected range (35-55mg/dl) of HDL. No statistics was computed because serum HDL level status found was constant.

- **LDL** :- More than three fourth of the post menopausal women i.e. (75.5%) were found to have normal serum LDL level
Summary and Conclusion

(mean 109.42±18.25 mg/dl). 23.0% were found in suspected range (mean 157.04±7.22 mg/dl) and only 1.5% were found in treatment needed category (mean 184.13±3.83 mg/dl). The probability value of Chi square was 10.24 at 4 df which is significant (P < 0.05 two tailed). Therefore significant association was noted between LDL and stress in post menopausal women.

- **VLDL**: Most of the postmenopausal women (95.5%) were found in suspected range (mean 30.26±5.39 mg/dl) and only 4.5% were found in treatment needed category (mean 41.31±1.17 mg/dl). The probability value of Chi square was 1.38 at 4 df which is not significant (P > 0.05 two tailed).

- **Triglycerides**: 45.5% post menopausal women were found to have normal serum triglycerides level (mean 127.39±15.89 mg/dl). 50.5% were found in suspected range (mean 173.12±13.56 mg/dl) and only 4% were found to have in treatment needed category (mean 203.00±3.63 mg/dl). Probability value of Chi square was 16.18 at 4 df which is highly significant (P < 0.003 two tailed). Hence, there is highly significant association between triglycerides and stress in post menopausal women.

5.3.3 Life style pattern

5.3.3(a) Physical activity

More than half of the post menopausal women (53%) were engaged in sedentary type of work while 47% were engaged in moderate type of work. Probability value of Chi square was 9.43 at 2 df which is a highly significant (P < 0.009, two tailed). As none of the Post menopausal women found heavy worker. Hence, highly significant association was found between physical activity and stress of Post menopausal women.
5.3.3(b) Meal Pattern

Regarding food belief 76.5% post menopausal women were vegetarian and 23.5% were ova vegetarian. No one was found to be non vegetarian. Meal frequency ranges two to four times but approximately more than half of the post menopausal women (57.0%) and 26.5% were taking their respective meals three times and four time in a day and some (16.55%) were taking meals twice a day. The value of Chi-square for association of meal pattern with stress was 6.006 at 4 df which is not significant (p>0.01, two tailed).

The study also revealed that 100% population was taking meal with their family members but meal time was not certain for every studied subject. It was observed that approximately more than half of the post menopausal women (54.0%) were taking their respective meal at a certain time in a day while meal time of 46% post menopausal women was uncertain.

5.3.3(c) Exercise

Out of 200 subjects only 76(38%) post menopausal women were found doing exercise daily. Remaining 124(62%) were not doing exercise daily. The probability value of Chi-square for association of exercise with stress is 2.033 at 2 df which is not significant (p>0.05, two tailed).

5.4 CONCLUSION

On the basis of obtained results-

Hypothesis H₁, “There shall be no significant difference in nutritional status, health status and life style pattern of postmenopausal women.”

In this study it was found that the hypothesis H₁ is not accepted because there was a significant difference in nutritional status, health status and life style pattern of postmenopausal women.
Summary and Conclusion

Hypothesis H\(_2\) :- “There shall be no significant association of some factors of nutritional status, health status and life style pattern with stress of post menopausal women.”

Hence H\(_2\) is not accepted because there was a significant association of some factors of nutritional status, health status and life style pattern with stress of postmenopausal women.

5.5 RECOMMENDATIONS

Stress is the body reaction to a change that requires a physical, mental or emotional adjustment or response. But too much stress can cause a lot of discomfort and can get in the way of being able to focus and achieve.

In present study following recommendation are felt to be suggested with the light of results and observations obtained regarding stress management, nutrient intake and food group intake of post menopausal women.

The suggestion if found to be worthy and implemented will certainly bring betterment of those postmenopausal women who are suffering from stress problems.

- It is desirable that postmenopausal women should accept the changing physiological condition and try to modify present activity habits and try to include at least 40-45 min. normal walk as a part of life.
- Also, diet pattern should be bifurcated in 4-6 small meals instead of 2 large meals.
- Females can get involved in groups, instead of living a lonely life. So that level of stress can be minimized.
- Yoga meditation, routine gardening can be part of life to minimize stress.
Summary and Conclusion

- High fried foods, rich gravy items, spicy foods should be strictly avoided to lower negative lipid profile status.
- Green leafy vegetables, skimmed milk and milk products should be included in daily diet to overcome calcium and iron deficiency.
- Preferring group activities can overcome stress.
- Inclusion of fiber rich foods should be increased.
- Prefer raw fruits instead of juices
- Antioxidant rich foods like gingers, garlic, fenugreek etc. should be increased to minimize negative lipid profile.
- Involvement in others matter should be minimized to overcome stress.
- To overcome loneliness, get involved in social works.

5.6 LIMITATIONS
- Financial aspects have limited the study to biochemical parameter like serum calcium status through BMD test.
- Type and mode of treatment/medication of the selected samples was not controlled and no alteration was suggested.

5.7 SUGGESTIONS
- Comparative study of post menopausal female and pre menopausal can be conducted.
- The study can include bone mineral density test.
- The study can include stress management therapy in postmenopausal women.
- Further study can be conducted on postmenopausal women from different communities to get detailed information about the health problems.