CHAPTER 2
REVIEW OF LITERATURE

The present research study was intended to study the effect of menopause on women. For this purpose researcher selected a sample of 300 women from Rajkot city. In order to obtain a detailed insight on the theme, researcher reviewed the existing literature from various sources. The sources were as follows:

- Saurashtra University (Central) Library
- Smt. S. B. Gardi Institute of Home Science (department) library
- Medical College Library, Saurashtra University, Rajkot.
- Menopause clinics, at Red Cross Community Health Center, Rajkot.
- Hansa Mehta Library, M.S.University of Baroda, Vadodara.
- Women’s Studies Research Center [WSRC] Library, M.S. University of Baroda, Vadodara.
- Various websites on internet (see Bibliography)
- Doctors and Gynecologist.

The reviewed studies are reported in the following subcategories:

2.1 Work and Health
2.2 Women and Health
2.3 Women and Nutrition
2.4 Menopause and Health
2.5 Problems during Menopause
2.6 Physical symptoms during Menopause
2.7 Psychological symptoms and Menopause
2.8 Sexual symptoms and Menopause
2.9 Treatment for Menopause

2.1 Work and Health

Lakhe in 2003 conducted a study which aimed at providing some insight into level of emotional and social adjustment of the adolescents of
working and non-working mothers and to study the relationship between the adolescents’ total level of adjustments of working and non-working mothers. A simple random sampling consisting of 500 adolescents from Nanded city were selected irrespective of their parents’ occupation, number of siblings, age, sex, religion, urban or rural background. The sample of 500 adolescents was divided into two groups each. The groups were adolescents of working mothers and adolescents of non-working mothers. His well-known and widely used personality inventory is the Bell’s Adjustment Inventory, which measures four areas of adjustment; home, health, social and emotional separately as well as composite scores for overall adjustment. It was found that the social adjustment factor is more among the adolescents of working mothers. The adolescents belonging to the working mother group clearly indicates greater level of emotional adjustments. The total level of adjustments of adolescents of working mother is higher. The researcher strongly recommends improvement in the areas of overall adjustments of the adolescents of non-working mothers group.

The study was conducted by Rathi and Kothari (2003) to investigate whether there exist a correlation between mother’s occupation and the child’s creativity. The effective sample comprised of 80 children of age range 10-14 years who were selected employing purposive sampling techniques. The four occupations identified for the mothers were doctors, teachers/lectures, clerks and housewives. The tool used was the verbal test of creative thinking by Baquer Mehdi. The data was treated with one-way ANOVA. Significant differences were obtained with respect to originality.

The study conducted by NIOH (1998) examined the work stresses of 107 women (20-60 years of age range), who were engaged in sewing machine operation in small garment manufacturing units employing three types of sewing machines (motor operated, full and half shuttle foot operated). About 74% of the machines were foot operated, where throttle action of the lower limb is required to move the shuttle of the machine. The short cycle sewing work involves repetitive action of hand and feet. The women had to maintain a constant seated position on a stool without backrest and the body inclined forward. Long term sewing work had a cumulative load on the muscle-skeletal structures, including the vertebral column and reflected in the
form of high prevalence of discomfort and pain in different body parts. About 68% of the women complained of back pain among which 35% reported a persistent low back pain. Common sewing work accident is piercing of the needle through the fingers, particularly the right four fingers. Unsatisfactory man-machine incompatibility, work posture and fatigue, improper coordination of eye, leg and hand, less illumination and the thermal stress are the major problems of the operators. The design miss-match of the work place may be significantly improved by talking women’s anthropometrics dimensions in modifying the work place, i.e. the seat surface, seat height, work height, backrest etc.

Beedi, pulverized tobacco leaves rolled in a tendu leaf, is an age old form of indigenous smoking in India. About 2 million people both men and women are engaged in this, one of the oldest cottage or household industries. The majority of the people belong to low socio-economic group. An occupational health survey in 1998 by NIOH of 178 women engaged in the making of beedi is reported. A worker makes approximately 750 to 1000 beedes during 9 to 10 hours workday. About 860 kcal energy is spent for the workday, which is about 4% of the whole day energy expenditure. About 40% of the women had poor nutritional status as estimated form the Davenport Index. Due to handling of tobacco, nicotine is absorbed in the body, mainly through skin, as evidenced from the excretion of nicotine and cotinine in the urine. Clinical complaints such as backache, headache, giddiness, etc. are common among the women and these are presumably related to their occupation. Sustained sitting posture leads to preponderance of low back pain among these workers. An ongoing study by Shah (1998) of women workers in the informal sector of Vadodara revealed occupational health problems of women workers. The women of the study were largely employed in the informal sector and housework. Around 70% of women reported health problems due to their work. Around 80% home based workers; casual workers and women in personal service are suffering from occupational health problems. Majority of home based workers were involved in papad rolling for wholesale merchants and various kinds of packaging works for factories. While more than 90.5% of women in personal service were domestic workers engaged in cleaning utensils and clothes in middle-class homes. The nature
of complaints was similar in both the cases. Severe body aches, lower back pain, swelling in hands and in legs, chest pain, were common in both categories; the nature of the health problem is different. Papad rolling women have to work under sunlight to maintain quality and they work for 4 to 7 hrs on an average in the sun. This affects their skin adversely. Domestic workers work constantly in water with detergents having strong and hazardous chemicals. Skin problems on hands and legs are common. If they work continuously for more than four-five years, it becomes a permanent problem. Women often express that these problems are part of their lives as women. The problem is much more serious for domestic workers because the workload and time spent in this situation is much more compared to those who work for their homes.

2.2 Women and Health

The study was conducted by Bhatnagar and Jain (2004) in Ajmer to predict cardiovascular diseases among young adult males and females (20-40 years) on the basis of prevalence of risk factors among both the sexes and also to formulate low, moderate and high risk categories of the subjects. Detailed information about the history of disease, diet and general health was obtained through a questionnaire, and general awareness of the subjects was judged by an awareness schedule. Anthropometric parameters and lipid profile of the subjects were also studied. The results of the study revealed that 90 per cent of the subjects belonged to the age group 30-40 years. Females were found to be more aware than males about their diet, general health and medicines. Out of the 10 risk factors of cardiovascular disease taken this study, six risk factors were found to be prevalent in the majority of males. These risk factors included sex, obesity, non-vegetarianism, alcoholism, smoking and ghee intake. Females had three risk factors domination in them, viz.: stress, physical inactivity and coffee or tea intake. The risk factor of family history of the disease prevailed equally in both the sexes. Thus due to the presence of maximum number of risk factors in males, they had increased chances of developing serious cardiovascular illnesses.
To assess the prenatal outcome of hypertensive pregnant women, a study was conducted by Mathur et al. in 2004 on 60 pregnant women (30 Normotensive and 30 Hypertensive pregnant women) attending the antenatal clinic of Mahila Chikitsalya, J.L.N. Medical College Ajmer. Pregnant women having blood pressure between 140/90 – 160/110 mm Hg were labeled mild hypertensive and those having blood pressure more than 160/110 mm Hg were labeled severe hypertensive. An inclusion criterion used was singleton pregnancy with hypertension. Hypertensive disorders are clinically important because they are associated with significant maternal and perinatal morbidity and mortality worldwide. Mothers eating inadequate diet during pregnancy period give birth to low birth weight babies, weighing < 2500g. A large number of such babies are premature (<37 weeks of gestation) and rest suffer from IUGR (intrauterine growth retardation). Past history of hypertension was seen in 16.6 percent hypertensive group. Family history of hypertension was seen in 10 percent normotensive women as compared to 20 percent in hypertensive group. The mean blood sugar, blood urea and serum creatinine levels of hypertensive pregnant women were high as compared to normotensive pregnant women. Still births in normotensive group were 3.4 percent as compared to 26.6 percent in hypertensive group. Low birth weight was seen in 43.4 percent neonates of normotensive mothers and 73.4 percent in neonates of hypertensive mothers. Premature neonates were 26.6 percent in normotensive group as compared to 50 percent in hypertensive group. IUGR was seen in 3.3 percent in normotensive group as compared to 23.3 percent in hypertensive group.

According to Parikh (2002), the transition from childhood to adulthood has tended to be sudden. The biological onset of adolescence is advancing in India, whereas age of marriage is rising due to expansion of educational opportunities. As a consequence, now young people have a longer interval between the onset of sexual maturity and marriage. Today, family life is changing from traditional to modern; hence educationists need to plan, to develop new abilities and creativity among the present adolescents. Every modern society believes in education as a potent instrument of social change. Education in human sexuality is highly influenced by social, economic, ethical, spiritual, and cultural and more factors. Schools need to take proactive
responsibility and play leadership role in correcting the common misconception that provision of information on sexuality in schools lead to increased sexual activities; by enriching school curriculum in the areas of reproductive health education for adolescents. There are still many other important facets of the issues that have not been incorporated. Contemporary period demands for a comprehensive package of information on sexuality of adolescents, which can really help to generate the necessary knowledge and information for adolescents through active students and teachers diagnoses on the subject.

As stated in the paper presented by Sharma et. al. In 2003 the development of a state can not only be measured through the technological and materialistic advances but also through the quality of life of the people. As in the case of status of women, the factors influencing the quality of life are not easy to list. Quality of life has political, economic, social, cultural, environmental and psychological dimensions in addition to the dimension of health. Education and health are two important parameters of quality of life. The Himachal Pradesh State Government taking steps for elevating the level of quality of life of women. The paper analyses the decade changes and in their two developmental parameters, observes uphill trend and introduction of many welfare schemes. The literacy rate has increased form 52.36 in 1991 to 68.68 in 2001. The availability of allopathic medical institutions has increased from 265 in 1991 to 457 in 2001.

The study by Sidhu and Bargoti (2003) aimed to assess the mental health and adjustment of the aged, also the relationship between mental health and adjustment of the old age was ascertained. Out of 100 aged people selected randomly, 50 were males and the remaining 50 were females. The adjustment pf the aged was assessed by using Samshad-Jasbir old age adjustment inventory by Hussain and Kaur (1991), this inventory measures health, home, social, marital, emotional and financial adjustment in old age. Mental Health was assessed by a self-made questionnaire prepared by the investigation. This tool studies six constituents of mental health, which are emotional stability, overall adjustment, autonomy, security-insecurity, self-concept and intelligence. Results indicate that males have scored significantly higher on the four constituents of mental health that is emotional stability,
overall adjustment, autonomy and self-concept. This indicates better mental health of the males than females. Males have scored higher than females on health, social, home, emotional and financial adjustment. However, on marital adjustment, females have obtained higher scores than males. Mental health is significantly related to health, home, social; emotional and financial adjustment among aged males. Mental health is also significantly related to home, emotional and financial adjustment among aged females. All obtained were co relational values are positive indicating a unidirectional impact of adjustment on mental health.

The family is undergoing changes, particularly towards women’s emancipation. Women were provided education and employment opportunities and the number of working wives has gradually increased. Stress, which is as modern-day malady, afflicts workingwomen who have to play dual role of being a productive employee at work place and a caring wife-mother-daughter-in-law at home. The aim of the study by Vijayanthimala was to measure the level of stress and its relationship to anxiety and marital quality stress, anxiety and marital satisfaction. Analysis revealed that women expressed more stress, anxiety and marital dissatisfaction than men. There was a relationship between stress, anxiety and marital dissatisfaction in case of women.

The practice of prenatal sex selection, higher rates of mortality among very young girls, and lower rates of school enrolment for girls as compared with boys suggest that “son preference” is curtailing the access of girl children to food, education and health care [and even life itself]. An attempt was made by Sharma (2002) to assess to resolutions perceived by the girls for resolving their personal, social and academic problems in the late childhood period. The total sample consisted of 50 girls of employed mothers and 50 girls of non-employed mothers, in the age range of 9 to 12 years from non-coeducational government schools of Udaipur city. Analysis of the data revealed that the major areas of resolutions as perceived by the sample group were more in academic area, that is, other associated factors in their life like teachers, school could be more beneficially looked on to overcome their problems in personal, social and academic area. Moreover, they were self-critical,
introspective and open to accept criticism. Girls of today are the women of tomorrow.

Several physical symptoms have been described in menopause that is related to decrease in levels of estrogen. These are mainly in the form of flushing, bone pains and vasomotor symptoms. Though it is well known that physical symptoms occur frequently in the peri-menopause period, the status of the psychological syndrome of menopause is far from clear. Chandra in 1998 reported the following psychological symptoms in the climacteric: depression (20-30 percent), anxiety (15-20 percent), sexual dysfunction (10 percent) and difficulties in concentration (5-8 percent). Most of the data is from menopause clinics, though general population studies contradict assertions that menopause has a negative effect on mental health. Menopause does not directly influence the well being of an individual. Mental health of women in the climacteric appears to be related to more social factors, pre-morbid functioning and physical health, than to the menopausal status. Several factors might contribute to increased psychiatric morbidity at menopause including life events such as death, poor physical health, altered roles, retirement or a poor marital relationship. Though in most cases, menopause may not directly cause psychological problems, small minorities do have the problems, which were described earlier. Surgical menopause has been linked to a higher incidence of psychiatric morbidity compared to natural menopause.

Joshi in 1997 studied women’s marital sexual experience conducted in villages in Padra and Baroda taluka. It was found that some were married at the onset of teen age and so never ever had any information about what are marriage, sexual relationship as well as menstruation. Parents of respondents were very strict during those days and never allowed girls to go out unescorted. Talking regarding menstruation even with their mother was never entertained.

Kotecha (1997) conducted a study of the patients with PID coming to the Obstetric and Gynecology Department of SSG hospital. The study included the perception of both the patient as well as the treating doctor’s. It was found that though the patient’s concept was biomedical, it was governed by socio-cultural concepts. Low self esteem and socially deprived position of
women was evident from their perception. Lack of rest, excessive work, and weakness were expressed as causes. They were partly non-medical as they make the body more vulnerable to the infection and inflammation. Husband’s behavior like excessive sexual desire, tendency to indulge in extramarital sex, ignoring hygiene and ignoring the disease condition of the woman were amply documented in the study and women have been interpreting them as causative for their illness. The doctor’s concept included infection, multiple partners, poor menstrual hygiene and multiple births.

### 2.3 Women and Nutrition

A study was conducted by Ambardekar and Husain (2004) in Mumbai to understand the correlation between diet therapy, lifestyle modification and reversal of heart disease. 30 subjects (18 males and 12 females) form the Santacruz Yoga Centre were selected for the study. Their anthropometric, biochemical and nutritional assessments were done using food frequency questionnaire and detailed oral interview. The subjects followed stick diet therapy and practiced yoga, pranayam and walking daily for one hour for 6 months. Results of the study indicated all the subjects suffered form CHD and hyperlipidemia. They belonged to the age group of 40 to 70 years; 60% had a family history of cardiovascular diseases; 66% were overweight; 40% led completely sedentary lifestyle; and 40% were non-vegetarians. After 6 months of intervention, there was a mean reduction of 5.2 kgs weight; decrease in energy intake by 300 kcals; reduction in fat and carbohydrate intakes by 30g and 200g respectively; while fiber consumption increased three-fold. In lipid profile test, a marked reduction in cholesterol from 249mg% to 173mg% was observed with a similar reduction in other lipid parameters. The standardized recipes were found to be widely acceptable, palatable and suitable as cardioprotective foods. Reversal of heart disease may thus be possible by the golden combination of a prudent diet and regular exercise regimen.

The fact that adolescents gain up to 50% of their adult weight, more than 20% of their adult height and 50% of their adult skeletal mass during this period. Stress on increased nutritional needs should be laid at this juncture. As stated by Bachlaus (2004), the adolescent girls in particular remains not
only largely neglected but often ignored, their needs difficult-to-measure, as also they are a hard-to-reach population because of social and cultural reasons which include traditional beliefs and customs. The adolescent girl population consequently faces a succession of grave nutritional challenges affecting not only their growth and development, their livelihood as adults but also safe motherhood. Therefore human and national development can be reinforced and accelerated only by promoting sustainable health and nutritional well-being of adolescent girls. Inadequate consumption of fruits and vegetables is common among adolescent. Fruits and vegetables are source of key vitamins, such as folate, which is linked to the prevention of neuro-tube defects in offspring, and heart disease and cancer in later life. The antioxidant and photochemical content of fruits and vegetables also have a role in preventing heart disease and cancer. Maximizing peak bone mass during the first two to three decades of by intake of milk and milk products -- the best source of calcium help to prevent osteoporosis at a later age. Amongst the adolescent girls malnutrition is an exceptionally large complex problem. Emphasis on nutritional adequacy for adolescent girls with the sustained strengthening of household food security needs to be developed by based approaches.

In the study conducted by Bambawale (2004), children from different schools in Mumbai were chosen. The age group of the children was between 6 to 9 years. Dietary scores assessed the macronutrient and micronutrient intake. The knowledge, attitudes and practices of the mothers were scored. The functional assessment of the children, in terms of academic achievements and physical performance was also scored. Clinical assessment and haemoglobin levels were correlated with the above parameters. A sub-sample was for assessment of the IQ levels. A strong positive correlation was found between the haemoglobin levels and cognition, indicating decreased functional capacity in anemic children. For intervention, a message book was formulated, for a ‘child mother’ approach and the impact of these messages on the knowledge, attitudes and practices of the mothers was observed. The post-intervention period showed a positive impact on the dietary scores as the functional scores of the children. Hence, it could be concluded that, ‘child to mother’ approach is beneficial as a nutrition
education strategy for dietary diversification to combat micronutrient malnutrition. The welfare of mother and child is intimately interwoven.

Breast cancer is the second major cause of death among women following lung cancer. It is not only a single entity but a family of conditions developed due to an interaction of genetic and environmental factors. Keeping all these in mind a study was conducted by Date et.al. in 2004 with 90 subjects at Tata Memorial Cancer Hospital, Mumbai. The data was obtained by a 24 hour diet recall validated by an exhaustive food frequency questionnaire. The objectives of the study were a) to compare the dietary intake of subjects with the Recommended Daily Allowances; b) to relate specifically the diet pattern in terms of macro and micro nutrient status, lifestyle, anthropometric and gynecological patterns for the incidence of breast cancer. The results showed that lifestyle, anthropometric and gynecological factors did not play a major role in incidence of breast cancer. Therefore it was found that diet played a significant role. It was also observed that the macronutrients varied a great range from the Recommended Dietary Allowances. The variables like energy (p<0.05), protein and fat intake (p<0.01) showed significant relation with the incidence of breast cancer. The intake of carbohydrates, saturated and unsaturated fat and fiber did not reveal any significant difference. The micronutrients did not indicate any statistical difference. It can be concluded that there was significant difference in the macronutrients that is in energy, protein and total fat intake whereas the difference between micronutrients was non significant and hence the percentage contribution of macronutrient contribution to total energy intake may play a significant role in etioloty of breast cancer, which may be complicated with low micronutrient intake.

Menopause is a special stage in the life of women but several irritable symptoms and diseases attributed to menopause are often encountered during third period. Thus a comparative study was undertaken in 2004 by Kuvera et.al. on 200 pre and post menopausal women of Bikaner City falling in the range of 40-45 years (having regular menstrual cycle) and 50-55 years (having no menstrual cycle from 6 consecutive months) respectively. To elucidate the effect of menopause, biochemical assessment was done of both
the groups in terms of Haemoglobin, serum blood glucose, serum cholesterol and triglycerides and serum calcium levels. Compared to pre group in post group majority of the patients were suffering from moderate degree of anemia. A significant difference (P<0.01) was noted in blood glucose levels between both the groups and mean level was higher in post menopausal subjects (98.60 mg/dl). Also the post group was at borderline risk of diabetes mellitus. The results taken by serum cholesterol and triglycerides depicted that post group was at higher risk of CVD. The mean serum calcium level was significantly higher in post group (12.5 mg/dl), even when compared with the normal values (9-11 mg/dl). Thus the post menopausal group was at higher risk of diabetes, CVD and osteoporosis and this may be due to the fall in level of female hormone estrogen after menopause which is responsible to maintain normal levels of glucose and cholesterol in blood.

Sixty non-insulin dependent diabetes mellitus (NIDDM) females of 40-60 years were selected from Punjab Agricultural University Hospital, Ludhiana by Aggrawal and Nagi (2003) for the study. Nutrition Education (NE) was imparted to all subjects at an interval of 15 days for a period of 3 months to study the impact of NE on the nutritional profile. The result of the investigation revealed that diet consumed by NIDDM females before and after NE were inadequate in most of the stuff (pulses, green leafy vegetables, other vegetables and fruits) and ultimately led to dietary inadequacy of nutrients (protein, fiber and zinc which have a protective role for diabetes. However, the consumption of cereals and fats was leading to more increased risk of diabetic complications. The BMI reduced significantly after NE but was seen above the standard. The mean fasting and post-prandial blood glucose levels reduced significantly. The value for TC, TG and VLDL-C decreased significantly, indicating the positive effect of NE. Hence it can be inferred that NE is an effective measure to bring about favorable and significant changes in the diabetic state.

In 2003, a study was carried out by Chhabra and Verma on two hundred and fifty schoolgirls (10-15 years) belonging to high socio economic group of Ludhiana city to assess the change in their dietary pattern over the last twenty years. The dietary survey was conducted by 24-hour recall method for three consecutive days. The average daily intake of cereals, pulses and
vegetables was lower whereas the intake of fat, milk, milk products and fruits was higher than the suggested intakes. The mean consumption of energy, fat, thiamine, calcium was higher while that of niacin, vitamin A, vitamin C and iron was lower than the RDAs. The respondents were having five meals a day. Snack intake has increased over the last two decades. Burger, Manchurian and pizza were the favorite snacks. The snacks contributed 19.2 and 18.0 percent of the daily energy and protein intake respectively, whereas in 1983 the corresponding values were 5.5 and 4.8 percent. The intake of cereals has decreased while intake of pulses has increased significantly (P< 0.05) in group I. However in group II intake of cereals, milk and milk products has increased and that of pulses has decreased significantly. In all the respondents, the intake of fruits, sugars and fats increased. The intake of vegetables decreased significantly.

In the study by Dave and Trivedi measured food and nutrient intake of 96 boys and 93 girls aging between 13 to 17 years, studying in 8th to 11th standards in three different schools of Rajkot city of Gujarat state is measured. Subjects were selected randomly from high schools based on their income groups i.e. Lower Income Group (LIG), Middle Income Group (MIG) and Higher Income Group (HIG) for each standard. A questionnaire was designed to collect information viz. (i) To derive the percentage of children with different educational levels of parents; and (ii) To know the food patterns and nutritional intakes of children with different educational levels of parents. 24 hour dietary intakes for three days, in which one was a holiday, were obtained. Nutritive value calculations were made using food tables. Results showed that, consumption of fruit was remarkably higher in children of educated parents. Consumption of milk and milk products was higher in girls of educated parents and in boys of uneducated parents. Mean nutrition intake was higher in subjects of well-educated parents, compared to subjects of less educated parents. This shows that, if the parents are educated, they can play role in providing better nutrient dense foods to their children. Frequent parents’ meet and training programs should be held by school management to import nutrition information.

In the study by Mathur and Sharma (2003) the sample consisted of both boys and girls in the age group of 13-15 years, studying in 9th class of
various government schools of Agra city. The sampling procedure was of a multistage random technique. The study was conducted to assess the perceived parenting patterns. A standardized tool developed by Bharadwaj, Sharma and Garg (1998) was used. The name of the tool is ‘Parenting Scale’. It also assessed the emotional competencies. A standardized tool developed by Bharadwaj and Sharma (1995) was used which was named as ‘Scale of Emotional Competencies’. A correlation matrix was prepared for the correlation values of the perceived parenting patterns and emotional competencies. Acceptance vs. rejection pattern of parenting revealed positive relationships with adequate expression and control of emotions and encouragement of positive emotions; while a negative relationship was obtained with ability to cope with problem emotions. Neglect vs. indulgence pattern of parenting showed a positive relationship with adequate expression and control of emotions, a negative relationship with adequate expression and control of emotion, a negative relationship with ability to cope with problem emotions. Freedom vs. discipline pattern of parenting showed a positive relationship with adequate expression and control of emotions and encouragement of positive emotions. Faulty role expectation vs. realistic role expectation revealed a positive relationship with adequate expression and control of emotions and encouragement of positive emotions, while a negative relationship with ability to cope with ability to cope with problem emotions. Results indicate that perceived parenting patterns affects emotional competencies in adolescents.

Malnutrition during adolescence can lead to retarded growth, reduced physical stamina, lower work output, poor cognitive development, and impaired learning abilities. The present survey was carried out among the school children of an urban area of Sambalpur by Mishra and Panda (2003). The main objective of the study was assessing the nutritional status and level of educational attainment, and to observe the influence socio-economic factors and malnutrition on the educational attainment among the IX and X standard school children. 75 boys and 75 girls selected from a school by random sampling method were personally interviewed by the help of a schedule designed and pre-tested for the collecting the information on family, its socio-economic condition. Nutritional anthropometry method was adopted
for the assessment of nutritional status and information on the educational attainment was obtained from the school records. Around 87-88 percent of children suffered from different grades of malnutrition according to weight for age and the percentage were still more on the basis of height for age. Boys showed poor academic attainment than girls. The later born children, children belonging to high per capita income level and children of educated mothers showed better educational attainment. The malnourished children showed poor educational attainment. Thus improved nutrition of children remains priority to achieve the full potentials of the investment made in children’s education.

The diet of pregnant women is considered to be of paramount importance. The study was conducted by Mishra (2003) to assess the nutritional status of pregnant women in Varanasi city by reporting daily nutritional needs. Data was collected randomly from 50 urban mothers (20-30 years) from different areas in Varanasi city to find out the dietary intake and requirement and to know daily nutritional needs, as well as to assess the nutritional requirement and to suggest them a balanced diet. A pre-tested interview and questionnaire method was used to collect the information; it was found that almost all the expectant mothers were literate. They were taking calcium, iron supplement tablets daily. The data showed that the average weight and height for expectant mothers were 60.11 kg. and 155.5 cm. The average calorie intake by pregnant women was 90% of the recommended dietary allowances (R.D.A.). The intake of cereal was 75% of R.D.A., intake of dal was 91% of R.D.A. and milk, green leaf and other vegetables were satisfactory. It can be concluded that there was not much difference seen in the nutritional status of pregnant women in Varanasi city. All the women were registered in the government hospital or primary health centers (PHC) and had medical guidance and was aware of their nutritional needs during pregnancy.

Ageing is a physiological process that begins at conception and results in progressive changes (WHO). The danger in this stage is isolation and detachment, which will deprive one from life, of its sense of meaning and reality. A study was conducted by Patwardhan and Godse (2003) with the objectives to find out the nutritional status of old people in Marathwada region;
to find out their meal patterns and diet intake and to know the effect of SES, their health problems and thus help to develop the Nutrition Education Programme (NEP); and evaluation of NEP. Present study was a combination of survey, interview, NEP and its action research as well as evaluation. Purposive random and specific purpose random sampling were used to select a sample of 500 people of the age group 60+, residing in rural and urban areas. Out of 30 people belonging to specific sample, ten each suffered from hypertension, diabetes and heart trouble. Data was collected through questionnaire, interview etc. SPSS package was used for statistical analysis.

The major objectives of the study conducted by Sahoo and Pal (2003) were to observe the demographic and socio-economic profile of the sample respondents and to find out the existing dietary pattern in relation to the respondent’s demographic and economic factors and to compare the same with available RDA. 150 tribal girls of 7 to 14 years age were randomly selected from Sambalpur town. Information regarding respondents’ demographic, socio-economic, dietary intake (24 hour recall method) was collected with the help of structured interview schedule. Height and mid-arm circumference were measured by anthropometric rod and measuring tape respectively. Body weight was measured by food weighing machine. The result analysis revealed that dietary intake of the respondents was found to be very poor and much below RDA. Socio-economic variables have profound influence on dietary intake of tribal girls. Therefore, there is an urgent need for nutrition education to patents, especially to mothers as well as to children. Parents should be made aware of the various developmental programmes implemented by the government especially for female children and should be helped by social and health workers to make use of these facilities.

Sports performance is not entirely dependent on nutrition, yet nutrition can definitely make a difference in performance. Thomas and Chandrasekhar (2003) aimed at supplementation of iron rich food formulation and studied its impact on performance of adolescent sports students in Kerala. A sample of 100 available mild anemic female sports students of Government vocational higher secondary school, Kannur was selected. Fifty were supplemented for a period of six months with iron rich food formulation. The remaining 50 were in the control group. The initial blood pressure of the selected female sports
students who were given iron rich supplements was 118.86 mm Hg (Systolic) and 78.80 mm Hg (Diastolic). There was a significant (P<0.01) decrease in both these measurements due to supplementation. Cardiac efficiency score (CES) also showed significant (P<0.01) improvement from 68.02 to 81.75 after supplementation for six months. Tread mill test shows significant (P<0.01) improvement from 30.58 to 33.34 minutes. As for vital capacity, there was significant (P<0.01) increment (2685 to 3030 ml) in the supplemented group. These observations on the cardio vascular parameters and performance in the supplemented anemic female sports students is reflective of the improvements in their iron nutrients, thus indicating the need to raise the iron nutritional status of sports students to optimum levels in order to maximize training and rearing out the potentials of peak performance among our sports personnel.

Energy expenditure is considered as a continuous function and a variable, dependent on the nature and the intensity of body activity, environmental conditions, previous exercise and time after meals. In view of the paucity of data on the nutritional status, energy intake and expenditure pattern of adolescents, the study was undertaken by Usha Devi and Nath in 2003. A sample of 400 adolescent girls belonging to 13 to 18 years was selected from urban and rural areas of Bangalore. Nutritional status including energy balance was assessed. Energy balance was calculated by 24 hours activity pattern. Seventy eight percent of the urban respondents were found to be in positive energy balance with a mean energy intake of 1959 Kcals. Negative energy balance was observed among 35% of the rural respondents with a mean energy intake of 1834 Kcals. This could be attributed to low energy intake and increased activity pattern among rural respondents. Mean weight of the rural respondents being 41.4 Kg. was found to be lower when compared to NCHS standard. The fact that 35 % rural girls having negative energy balance is a matter of concern as these girls enter into their reproductive journey with lower body weight and negative energy balances which would influence the outcome of pregnancy. Hence intervention is essential as these girls are future mothers.

The reproductive cycle of a woman makes a huge demand on the nutrient requirement of mother and affects her nutritional status considerably.
Tight from conception, growth requires greater dietary essentials than maintenance. The study was conducted by Vaish et. al. in 2003 on rural pregnant women (16+1 week gestation) belonging to low socio-economic status of Kalyanpur block of Kanpur district of Uttar Pradesh. Sixty women from three villages were selected for supplementation studies. 20 women of Hridyapur village were of experimental group, 20 of Chakarpur village were of ICDS group and rest 20 of Singhpur Kachhar villages was control (without supplementation). The feeding trial was continued for six months. The ICDS group was fed “panjiri”. The experimental group was fed with four newly developed recipes viz. Chikki, Nutritious, Panjiri, groundnut rice and sprouted Bengal gram. Control group was not given any supplement. Observations were recorded from fourth month of pregnancy to full term for individual woman on weight gain and haemoglobin level. Significantly higher weight gain (9.2 kg) was observed in experimental group followed by ICDS group (8.1 kg) over control group (5.5 kg). Likewise the haemoglobin level was highest (0.70 g/100 ml blood) in experimental group followed by ICDS group (0.50 g/100 ml) as compared to control group (0.12g). Values for experimental and ICDS groups were highly significant.

The study was conducted by Verma et al. (2003) on 320 female subjects representing rural and urban population of selected areas of district Shimla of Himachal Pradesh. Food consumption survey was carried out to assess the nutritional status of the subjects of both the domains. In rural area, it was found that wheat and maize were the main cereals consumed by the respondents. Among pulses, black gram dal was most commonly consumed. Desi ghee was consumed in good amounts with almost every food preparation. Wheat and rice were both consumed in urban area. The calorie intake in both the groups was below and protein intake was above the recommended levels but this difference was not statistically significant. The iron consumption was below the recommended levels in both the groups. The intake of calcium, vitamin C and vitamin A was lower in rural population and higher in urban population when compared with recommended levels. The BMI calculations suggested that majority of subjects in rural as well as urban population were of normal nutritional status.
Swaminathan studied the pattern of diets consumed in different states of India in 1999. It was noted that consumption of milk and pulses was higher in the states of Gujarat, Punjab, Rajasthan, Madhya Pradesh and Uttar Pradesh, while it is moderate in Andhra Pradesh, Bihar, and Maharashtra, Karnataka and West Bengal and low in Jammu and Kashmir, Kerala and Tamil Nadu. The diets, in general, consisted predominantly of cereals and millets. Consumption of green leafy vegetables, fats and oils was also low. Consumption of fish and meat is high in the states of Kerala, West Bengal and Maharashtra.

Table 3

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Area</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gujarat</td>
<td>All India</td>
</tr>
<tr>
<td>Rice</td>
<td>073</td>
<td>241</td>
</tr>
<tr>
<td>Wheat</td>
<td>013</td>
<td>084</td>
</tr>
<tr>
<td>Millets &amp; other cereals</td>
<td>349</td>
<td>109</td>
</tr>
<tr>
<td>Total cereals &amp; millets</td>
<td>425</td>
<td>434</td>
</tr>
<tr>
<td>Pulses</td>
<td>043</td>
<td>034</td>
</tr>
<tr>
<td>Leafy vegetables</td>
<td>026</td>
<td>021</td>
</tr>
<tr>
<td>Other vegetables</td>
<td>049</td>
<td>071</td>
</tr>
<tr>
<td>Fruits</td>
<td>--</td>
<td>010</td>
</tr>
<tr>
<td>Fats and oils</td>
<td>005</td>
<td>012</td>
</tr>
<tr>
<td>Milk &amp; milk products</td>
<td>097</td>
<td>069</td>
</tr>
<tr>
<td>Meat, Fish and Egg</td>
<td>006</td>
<td>014</td>
</tr>
<tr>
<td>Sugar &amp; Jaggery</td>
<td>006</td>
<td>019</td>
</tr>
<tr>
<td>Condiments</td>
<td>005</td>
<td>018</td>
</tr>
</tbody>
</table>

Since the surveys were limited to a small number of families, it may not truly reflect the pattern of food consumption by low-income groups who constitute a greater part of the population.
2.4 Menopause and Health

Earlier, women were considered asexual after menopause. Today, the stress is on the greater potential for sexual enjoyment, since menstrual problems and the fear of pregnancy no longer impede women's sexuality. However, if physical problems like vaginal dryness lead to dyspareunia, women will cease to enjoy sex, in spite of a change in attitude. In their own experience, the authors (Krishna & Shah) in 2004 found that menopausal women suffering firm vaginal dryness or dyspareunia willingly discuss this topic only if the physician initiates it. Estrogens with progestine supplement are the therapy of choice for menopausal dyspareunia. The addition of a vaginal estrogen cream and a caring attitude on the part of the physician are both excellent adjuvants.

As stated by Mohile (2003), menopause is a physiological endocrinopathy occurring due to cessation of ovarian function. Clinically, menopause is a retrospective diagnosis. When a woman has not menstruated for twelve months, then she is said to have reached menopause. Perimenopause is the period of five years before and on year after menopause. The first two years of menopause are sometimes designated as early postmenopause. Menopause can be natural or surgical. Worldwide the age of natural menopause is between 45 and 55 years, the mean age being 50. In Indian women, it is 43.5 to 48.5 years. Life expectancy at birth has more than doubled in the last fifty years. It has increased from around 30 years at the time of independence to 61 years in 1992-96. Hence large number of women will reach the age of menopauses and many will have more than 20 years of post-menopausal life. The number of women in the post-menopausal age of 50-59 years is projected to increase from 36 million to 2000 to 63 million in 2020. As ovarian function stops, a variety of physiological changes take place. Many of them are due to estrogen deficiency and some are due to ageing process. No two women react to menopausal changes in the same way. The social, cultural background, emotional and physical health and her beliefs about menopause play an important role on her acceptance of this change in her life. That she is now no longer likely to have a conception could be a relief to some and a nightmare leading to depression to some. The stoppage of
monthly bleeding that interferes with her work may be a welcome event to some, while to others this may mean a loss of femininity. As stated further the estrogen deficiency symptoms may cause some short term as well as long-term problems. The short-term problems may be related to peri and post-menopausal uterine bleeding abnormalities, genital symptoms, vasomotor symptoms, urinary symptoms and psychological symptoms. The long-term problems may be related to genital problems, neurological symptoms, osteoporosis, sarcopenia, cardio-vascular effect, ophthalmic effects, dentition effects, skin and hair effects and thromboembolic phenomena and varicose veins. Nagar (1997) aimed at finding out the perception of middle-aged women regarding menopause and its impact. A sample consisted of 30 married women in the age range of 39 to 52 years residing in Baroda city. A positive correlation was found between the physiological and socio-psychological problems associated with menopause. The results of the study indicated that women reported problems like backache, increased headache, hot flushes and sleep disturbances, sadness, impatience, lack of concentration, decrease in memory and nervousness. Most of the women perceived their spouses, friends and mother-in-law as supports during stressful situations due to menopause. Majority of the women sought professional help for physiological problems associated with menopause.

According to a handbook of endocrine disorders the term indicates cessation of menstruation and involution of reproductive life. The menopausal age is usually between 45 and 50 years; in most women, menstruation occurs at irregular intervals, becomes prolonged and the flow gradually ceases. Many women have no symptoms or just mild symptoms at the time of menopause. The climacteric symptoms may not manifest for several years after the stoppage of menstruation. Artificial menopause may result from ionic irradiations or after bilateral ovariectomy. The symptoms are nervous and autonomic, psychological and miscellaneous and are, hot flushes, sweating, headaches, palpitation, paroxysmal tachycardia, anginal pains, dizziness or fainting spells, tingling sensations, mental depression, lethargy, lack of energy, lack of concentration, generalized vague aches and pains and symptoms of arthritis. The individual may also suffer from pruritus, ulcerative stomatitis, atrophic vanginitis, kraurosis vulvae, leucoplakia vulvae, etc.
Obesity, mild to moderate hypertension and hirsutism may probably occur. Mild symptoms of thyrotoxicosis or myxoedema also represent disturbed thyroid function. No specific treatment is required for mild cases except reassurance, readjustment and administration of estrogen in small doses.

Kahann, Kiyak and Liang in 1980 reviewed (& provided evidences) that in response to various kinds of survey women considered menopause as requiring little readjustment when compared with other life events. From the study by Kahann et. al., it appeared that the menopause was not viewed with trepidation by younger women, nor remembered as a stressful period of change by the elderly.

Flint (1979) suggested that there is a little evidence that menopausal symptoms bear at least some relation to work attitudes and indeed to the wider social framework in which the menopausal changes are experienced.

According to Varley et.al., in 1976 the term, menopause refers to absence of menstruation for three months following some menstrual cycles in the preceding year. The post-menopausal female has had no periods for twelve months. Before this stage many cycles may be anovular and Doring in 1969 recorded an incidence of 12% in women aged 41 to 45 years.

McKinlay and Jefferys in 1974 explicitly studied the positive aspects of menopause. The survey aimed at eliciting information on aspects of the ‘menopausal syndrome’, two questions on attitude were included in a questionnaire. The majority of pre-menopausal respondents (77%) did not anticipate any difficulties. Only about 13% of pre-menopausal and 9% of post-menopausal women expressed regret at the cessation of menses.

Van Keep in 1970 conducted a survey for an International Health Foundation of attitudes to the menopause in several European countries included the statement ‘the menopause marks the beginning of old age’. Seventy four percentages of women in Britain disagreed with this. In other countries the amount of disagreement was less, but overall the majority did not concur.
2.5 Problems during Menopause

The study was conducted by Bansal and Thaker (2005) to determine age and perception of menopause as well as prevalence of various menopausal symptoms amongst underprivileged women of Ahmedabad. A questionnaire was used as a tool for data collection from 100 menopausal underprivileged women in Sheth V.S. General Hospital. The results showed that 29.5% suffered from joint pain, poor memory and fatigue, 25% had irritability, 22.7% had urinary symptoms, 18.18% had hot flushes, 6.81% dysparunia, 4.54% leucorrhoea and anxiety and 2.27% had post menopausal bleeding. For the respondents background 62.2% were illiterate and mean age for menopause was 41-45 years. 93.18% women had not taken any treatment and none knew about pap’s test and self-breast examination. The researcher concluded that uneducated and under privileged women are unaware of their right to health care and protection, as some did not realize the need to consult doctor for their menopausal problems. They also realized the need for educating females for cancer prevention tests.

Sen (2005) conducted a study in Kolkatta, where a group of urban educated upper middle class women aged 40 years and above were given a questionnaire. The aim of the study was to look into the specific health needs of socially settled urban women at a crucial period of their lives, which is often ignored and overlooked otherwise. The results showed that the most prevalent symptom was joint pain, mostly of knee joint. Few other symptoms in order of decreasing frequency were memory impairment, anxiety and weight gain. Hot flush was complained by only one fourth of the women studied. The researcher concluded that the findings were at variance with western literature, where vasomotor symptoms are sited as most prevalent in this age group and so intended to develop a wide database in near future.

Zutsi (2005) in Delhi studied prevalence of urinary symptoms in peri-menopausal age group. 500 women in the age group of 42 to 55 were given questionnaire and results showed – 334 patients were P₂ and P₃, 4% had urge incontinences, 10.4% complained of stress incontinence, 42 patients had both, 9.4% complained dysuria, 2.4% hesitancy, 6.4% frequency and 6% nocturia. Prevalence of urinary symptoms was not very high. Amongst those
facing symptoms only 30 had taken any treatment – 18 allopathic, 5 homeopathic, 4 ayurvedic and 4 were operated. 13 patients reported recurrence of symptoms after taking any mode of treatment. The prevalence rate has not been found so high. The results do not match with the western figures; probably our women do not give much importance to these symptoms.

As stated by Krishna and Shah (2004) according to Prof. Won-Whe Kim, Pusan National University, Korea, peri-menopausal symptoms vary considerably region wise. In South-east Asian countries dominant symptoms in this group are: shoulder stiffness (Japan), hand joint pain (Korea), backache and tiredness (Taiwan) and headache (Philippines).

A study by McKinlay and Jefferys (1974), of over 600 women also included a group of regularly menstruating women but the age range was 45-64. Hot flushes ranged from about 18% among normally menstruating women through a maximum of 75% during the climacteric to about 29% among women who were at least nine years post-menopausal. Percentages of some other symptoms in the menopausal transition group, are reported as headaches 38.3% (compared with the 45% of women before menopause); sleeplessness 45% (compared with 20.9% before menopause); depression 55% (compared with 38.8% before menopause).

In 1969, 2000 women aged 46-55 were surveyed by the International Health Foundation in several European countries (Van Keep, 1970). In the survey many symptoms were included which may well be experienced at other times of life. Although 22% of the sample was reported to be still experiencing normal regular menstrual cycles, it is doubtful whether this whole group can be considered as clearly outside the climacteric years and hence a valid comparison group. Since 20% of those still experiencing regular cycles reported hot flushes, it seems likely that many of them were already in the peri-menopausal phase where various climacteric changes are already taking place. Also, since the regularly menstruating groups were over 45 they are probably not typical of menstruating women in general. The survey gives percentages of symptoms most frequently experienced in their age group (46-55), as: hot flushes 55%, tiredness 43%, nervousness 41%, headaches 38%, insomnia 32%, depression 30%, irritability 29%, joint and muscle pain 25%.
A rather large incidence survey by Jaszmann, Van Lith and Zaat (1969) was carried out in Netherlands, of women at various stages of menopausal transition, as well as a normally menstruating group, defined as having had normal menses during the year preceding the survey, precise age range not given but mean 45.3 years. Hot flushes rose to a maximum of 65% one to two years after cessation of menses and decline thereafter. Muscle and joint aches were reported in 30% of women who were regularly menstruating and this rose to 50% three years after menopause. Depression was not a feature of the menopausal years. The same is true of irritability though it increases slightly in the menopausal transition, from 28% in normally menstruating women to 37% during the climacteric. The authors believe that only hot flushes, sweating and muscle and joint aches can be seen as typical climacteric complaints.

Neugraten and Kraines in 1965 compared women of all ages on a large number of physical and psychological symptoms. In spite of the fact that currently menopausal women scored higher on physical symptoms, it was the adolescent group (age 13-18), which scored highest on psychological symptoms and the lowest scorers, were in the post-menopausal (age 55-64) group. The authors suggested that although physical symptoms are high at the two times of great hormonal change (adolescence and menopause) the older women because of their experience and maturity have learned to cope more effectively, at the psychological level, with biological changes and stress. This bonus that comes with experience and maturity obviously manifests itself fully when the menopause is over.

An early study, in 1933, of 1000 women by the Council of Medical Women's Federation of England which reported that 15.8% were free of symptoms at the menopause, 62.3% had no symptoms other than hot flushes, for an average duration of two years and that 89.7% carried on their daily activities without any interruption.

2.6 Physical Symptoms during menopause

Erlik, Meldrum and Judd in 1982 in their study found that women with severer flushes had significantly lower levels of oestrogen than women who
had never had flushes. The women with the symptom also had significantly lower ideal body weights, leading the authors to suggest that the know effects of body weight on estrogen levels in post-menopausal women may be important factor in hot flushes.

Bungay, Vessey and McPherson (1980) studied various symptoms and found similar decrease in headaches from age 40, in women and in men.

Bungay, Vessey and McPherson (1980) included reports on frequency and urgency in both women and women in their study on symptoms. Though these symptoms did not increase through the menopausal and post-menopausal years in women there was a steep rise in the same age groups in men, presumably reflecting prostatic problem.

Wood in 1979 conducted an extensive survey of 20 symptoms in five year age groups of women from 20 to over 65 years revealed that headaches actually decrease from 45 years. Palpitations remained stable from age 40 to after 55, when there was a slight increase, not statistically significant.

Campbell in 1976, Koper in 1979 and Vaughn and Hammond in 1981 conducted a similar kind of studies. They found that of women who attended a clinic report an increased incidence of frequency, urgency, infections of various kinds and incontinence with menopause. The rise in the incidence of these symptoms in clinic patients was assumed in the urether and the bladder, which in turn are thought to be the reasons on estrogen deficiency. The symptoms all responded well to estrogen treatment.

Thompson, Hart and Durno (1973) reported by the incidence of hot flushes. 74% of post-menopausal women in a general practice in Scotland reported hot flushes. Of these 17% had been having them for over one year, 50% for two to five years and 19% for more than five years.

The International Health Foundation Survey of 2000 European women aged 46 to 55, conducted by Van Keep, found reports of palpitations in 24% of the women. Since younger women were not asked to report, there is no way of assessing the possible role of the menopause in this aspect.

Jaszmann, Van Lith and Zaat (1969) studied and reported that aches in joints, bones and muscles were observed in 30% of women who were menstruating normally. There was a rise to a maximum of about 46% through
the menopause, with a subsequent decline to 33% at five to ten years after the menopause.

Chaudary (2005) conducted a study in Ahmedabad on post-menopausal women for evaluation of osteoporosis. Average age of menopause was 46.7 years and subjects were +4 years (those who passed menopause 4 years back). Results showed severe osteoporosis were found in women from age 60 and above, most of them with moderate osteoporosis and majority required surgical treatment with added risk of surgery and anesthesia.

According to Jog (2005) decreased Bone Mineral Density (BMD) of women in post-menopausal age is a matter of concern. Early detection of osteopenia and osteoporosis and its’ appropriate management was dealt in a study conducted in Pune city. Measurement of BMD was done in post-menopausal women (min. 2 years). Appropriate advice regarding diet, exercises and medication was given depending upon T-score and Z-score. Follow up BMD was done every year for 3 years. It was found that osteopenia responds better and early. Osteoporosis shows slow improvement. Regular exercise gives early results.

Kuriyan et.al in 2005 studied BMR and various anthropometrics characteristics of the male and female subjects of Bangalore city. The age and height of the subjects of different BMI groups in both male and female subjects did not show any significant differences. The body weight, percent body fat and fat free mass of the underweight and normal BMI subjects in the male and female groups were significantly lower than the overweight group. BMR was measured for underweight, normal and overweight male and female subjects and was compared to the FAO/WHO/UNU prediction. When the BMR of the entire group of male and female subjects was compared to the FAO/WHO/UNU prediction, the difference was found to be 8.3 % and 7.6 % respectively. These results substantiate the findings of the earlier studies, which showed that Indians had a BMR about 10% lower than Europeans. The result of this study has confirmed the need for population specific BMR prediction equations and has generated gender specific equations for different body sizes, but this needs to be extended into larger datasets.
According to Shah and Shah (2005) uro-genital problems are distressing symptoms in menopausal life. 10% of women complain of symptoms due to genital atrophy within three years of menopause due to normal and probably all women experience at least one significant problem from lower uro-genital atrophy 40 years after menopause. They divided symptoms into six categories – 1. Urethral syndrome, 2. Urinary incontinence, 3. Uro-genital prolapsed, 4. Recurrent urinary tract infections, 5. Atrophic vaginitis and 6. Sexual dysfunction. It was found that uro-genital prolapsed was in around 40% which was attributed due to frequent child birth and child birth related injury to genital tract. Incidence of prolapsed increased as a result of diminished estrogen level and loss of adequate collagen support. For urinary incontinence it was found that 25% had stressed incontinence, 30% had mild incontinence whereas urge incontinence was found in 45% of post-menopausal women. A recurrent urinary tract infection was commonest post-menopausal problem. Symptoms like vaginal dryness, itching, irritation; dyspareunia and recurrent bacterial infection are quite common. Cumulative effect of hormone deficiency leads to loss of self-esteem, poor self-image and eventually loss of sexual desire. Uro-genital problems can be managed by – 1. Non-hormonal therapy – reassurance, good diet and antioxidant drugs or by 2. Hormone replacement therapy – may be systematic and local HRT as vaginal tablets and cream, 1-2 week’s treatment or a symptomatic long term HRT.

As stated by Johnson et.al. in 2003, the prevalence of osteoporosis, which is a debilitating bone disease, increases with age. Also, a higher proportion of women are affected by this condition. It is a silent condition and in many cases, the condition is diagnosed only after an individual suffers a fracture. Osteoporosis is preventable. Guidelines in Canada and U.S. suggest that 1200 milligrams of calcium per day is recommended for individuals over 50 years of age. Studies have shown that dietary calcium intake from pre-adolescence through late adolescence is critical for building high bone density. Among those over 50 years of age, adequate levels of calcium intake prevent the rapid age and gender related decline in bone density. Sources high in calcium include certain cereals grains and products (e.g. Ragi), pulses, legumes (e.g. Whole Bengal gram, black gram dhal, rajma and green gram).
green leafy vegetables (e.g. Amaranth, agathi, drumstick leaves), milk and milk products and fish with small bones. In term of exercises, weight bearing exercises such as walking, cycling, running, stair climbing has been shown to be beneficial in promoting bone health. Also physical activities increase muscle strength and flexibility, increasing independence and decreasing risk of falls and related fractures. An added benefit to the optimal nutrient intake, exercise and not smoking is improved health and decreased incidence of cancer. In addition with the advancement of science, options such as drug therapy (HRT) along with calcium and vitamin D supplementation and exercise are available.

According to Mishra, Henery and Kapoor (2003) the menopausal condition is not only related with dyslipedemia and cardio-vascular problems but also with bone health problems, especially osteoporosis. Postmenopausal osteoporosis is the result of low peak bone mass and/or increased pre- and post-menopausal bone loss. The latter is primarily caused by estrogen deficiency. The reduction in bone mass eventually leads to deterioration of micro-architecture of bone tissue and thus to reduce bone quality. The HRT is not only beneficial in the treatment of post-menopausal dyslipedemia but also in the treatment of post-menopausal osteoporosis. This is a cross-sectional study between pre-menopausal and postmenopausal ladies. Women of control group (pre-menopausal) ladies are selected randomly and the women of experimental group (post-menopausal) are taken from contacts in hospitals, various clinics of Bilaspur city, Raipur city and Bhilal Nagar randomly. They were given different types of therapy and the effect was assessed. The HRT was found most significant for the correction of the very condition. So, we can conclude that age related and premature surgical menopause, both are related to high serum levels of Ca and hypercalciuria, thus reduced bone through various mechanisms. The resultant osteoporosis is resistant of supplementation with Ca and Vit. D, only after treatment with hormone replacement therapy [HRT], a significant improvement in osteoporotic condition was noted in the study group.
2.7 Psychological symptoms during menopause

In a British survey by Bungay, Vessey and McPherson (1980) irritability significantly declined in women at about age 48, where as it did not decline in menopause.

Greene and Cooke in 1980 conducted a survey using a multivariate analysis technique, where life stress in general was shown to have more influence than did the menopause on psychological and somatic symptoms. There was no significant increase in total life stress at the time of the menopause and the highest levels of both psychological and somatic symptoms were found in the 35-44 years old group, after which age there was a steady decline.

Wiessman in 1979 reported a study of a group of women diagnosed as suffering from major non-bipolar depression. There was no increase in depressive symptoms in the menopausal years, compared with the pre and post-menopausal years.

Wood (1979) in a comprehensive survey in Australia of women of all ages found no increase with age (including the menopausal transition) of the psychological symptoms investigated and indeed found a decline with age in headaches and irritability. He also found that women with psychological problems frequently seek help at gynecological clinic, at any age. This overlap between gynecological and psychiatric problems partly explains why clinicians often assume a casual relationship between ovarian failure, hot flushes and psychological problems. Wood the author of an Australian survey, in 1979 suggested ways in which psychological symptoms may become associated with the menopausal phase. Firstly, psychological symptoms may have preceded the climacteric, may be occurring secondarily to hot flushes or may be a result of new stresses, which may occur at any age. Secondly, the propensity to link many psychological symptoms with the menopause may provoke new anxiety; or it may turn the menopause in to a scapegoat for patients with chronic anxiety or depressive states. Finally, the author rightly suggests that more information about the general effects of ageing, favorable and unfavorable, would put the menopause in a better perspective.
Wood, Larsen and William (1979) in their study found that when negative states are investigated, they are found to be low in the older groups. A large study of women of all ages found that tension decreased steadily from about age 35 to a minimum at ages 50-59. Menstrual pain continued a steady decrease with age throughout the menopausal transition.

**Figure 7**

**INCIDENCES OF PREMENSTRUAL TENSION AND PAIN**

A study by Ballinger (1977) compared women, aged 40-55, referred to a gynecological clinic with a non-clinic group found a higher proportion of psychiatric morbidity in the clinic group. Also their psychiatric disorder was more severe and more depressive in nature.

Hangneel (1966) in his ten-year prospective study in Sweden found no evidence of an increase in mental disorders during the climacteric. In fact the peak of mental disorders was age 35 to 44 years, after which there was a decrease.

**2.8 Sexual symptoms during menopause**

According to Krishna and Shah (2004) earlier, women were considered asexual after menopause. Today, the stress is on the greater potential for sexual enjoyment, since menstrual problems and the fear of pregnancy no longer impede women’s sexuality. However, if physical problems like vaginal
dryness lead to dyspareunia, women cease to enjoy sex, in spite of a change in attitude. As authors found that menopausal women suffering from vaginal dryness or dyspareunia, were willing to discuss this topic only if the physician initiates it. The author also suggested that estrogens with progestin supplement were the therapy of choice for menopausal dyspareunia. The addition of vaginal estrogen cream and a caring attitude on the part of the physician were both excellent adjuvant.

As regards sexual feelings or interest, a survey by Bungay, Vessey and McPherson (1980) in Britain of men and women aged 30-64 years, taken from a selection of general practitioners' lists, showed that at all ages women have less interest than men in sexual relations. From their respective baseline, though, whereas in men there is a decline from about 48 years, in women at that age there is a slight, probably not significant, reversal of a previous trend towards loss of interest. In a survey by Hallstrom (1977) of peri-menopausal women in Sweden the data confirm a decline of sexual activity in women from 38 years to 54 years. It also found that the majority of women report moderate sexual interest beyond age 50, and many well beyond that.

A study by Hallstrom (1977) of 800 women gave percentages of pre-climacteric as well as menopausal women. Percentages of women expressing moderate sexual interest at different ages are 38 years, 72%; 46 years, 70%; 50 years, 62% and 54 years, 48%. As regards sexual behavior the figures for women reporting no change in capacity for orgasm are: 38 years, 70%; 46 years, 62%; 50 years, 66% and 54 years, 50%.

Pfeiffer and Davis (1972) in their study of middle and upper socio-economic groups found that women and men experience a significant decline in sexual intercourse with increasing age. Men had more frequent intercourse at all ages but the rate of decline in both groups reached the same significant level.

A study of the determinants of sexual behavior in men and women from 46 years to 71 years of age by Pfeiffer and Davis (1972), found that a much larger number of variables influenced sexual behavior in men than in women. The sexual functioning of the men through middle life to old age was influenced independently by factors of: age (negative), health (positive), social
class (positive), treatment for hypertension (negative), life satisfaction (positive), physical functioning (positive and excessive concern over physical function findings (negative). Only a small number of factors made independent contributions to sexual functioning in women. They were mainly marital status (intact marriages were positively correlated) and age (negatively correlated). Only small contributions were made by educational level (positive), being employed (positive) and being post-menopausal (negative). A highly salient feature emerged from a separate analysis of the relationship between past sexual experience and present sexual functioning. In women and in men past sexual experience is an extremely important feature of present sexual enjoyment and interest. This showed that continued sexual activity in older age groups is positively related to previous enjoyment of sexual behavior and experience. This means that with changing social attitude a different pattern can be expected in women’s sexual behavior with age.

With regards to the incidence of change in sexual interest and behavior during the menopause on study by Pfeiffer, Verwoerdt, and Davis (1972) showed that by age 50, 58% of women and 49% of men reported some decline in their sexual interest and activity; 79% of women and 72% of men reported a decline by the age of 60. In terms of actual interest (as opposed to decline from former level) the percentage of men reporting absence of sexual interest was zero at age 50, rising to 11% by 65; 7% of women reported absence of interest at age 50 rising to 51% by age 65.

An American survey of middle and upper socio-economic groups by Pfeiffer, Verwoerdt and Davis (1972) showed a significant decline in interest with age in both men and women. Again from their respective baseline, the amount of decline in interest from age 46 years in men and in women is at the same level of significance.

2.9 Treatment for Menopause

Agrawal (2005) in Vadodara conducted a study to see the effect of Menotab’ as an alternative branch medicine in post- menopausal syndrome. For the purpose 105 women with post-menopausal syndrome were selected and were divided into two groups of which group-I was given ‘Menotab-A’ and
group II was given ‘Menotab-B’. 70 women, 35 from each group who completed the study were evaluated. The results showed that in both the groups the improvement in psychological symptoms was better than the physical ones. Subjective symptomatic relief and fall in serum FSH and serum LH was more in group I. No major side effects were noted in either of the group. It can be concluded that for a series of physical and psychological symptoms, grouped under a common heading of post-menopausal syndrome, menotab is an option worth trying for the treatment in the women hesitant in accepting the conventional HRT.

According to Dott (2005) lifestyle changes can have an enormous impact on health. Without a doubt, the most powerful lifestyle habit affecting health is cigarette smoking. In addition to increasing the risk of heart disease and osteoporosis, smoking brings on menopause up to three years earlier -- which also increases risk of heart disease and osteoporosis. Physical inactivity is a lifestyle risk factor for many serious diseases. For example, not exercising is almost as great a risk factor for developing heart disease as smoking.

1) Adequate exercise is the crucial ingredient missing in most women's lives. Activities such as brisk walking, running, aerobics, cross-country skiing, dancing, and tennis not only help the heart, but also the bones, the muscles, balance, and weight management. Some women report fewer hot flashes when they exercise regularly. In addition, exercise promoted better, more restorative sleep and stimulates "feel-good" brain chemistry that turns aside negative thoughts and depressed feelings. It is, without a doubt, the best remedy for a whole host of menopause complaints. For the greatest benefit, every day get at least 30 minutes of moderate aerobic exercise --such as brisk walking for two miles. Women who are just beginning an exercise program should first check with their health care provider to determine if this level of exercise is appropriate initially. Diet and health are intimately linked -- and women who are approaching menopause have special dietary concerns. With declining estrogen levels, midlife women are at increased risk of developing heart disease and osteoporosis, two serious conditions that are greatly affected by diet.
2) Diet is another "lifestyle" factor that can be considered "menopause treatment". Heart disease can be lowered by eating little or no cholesterol and fat, plus limiting salt and alcohol intake. Instead, select a proper diet high in fruits, vegetables, and grains. Osteoporosis prevention requires adequate calcium intake --starting as early as in the teen years to build bone strength to its peak so that when bone loss normally begins at about age 30, there is a "bone bank account" from which to draw. Most adults should consume 1,000 mg per day of total calcium, or 1,500 mg per day for postmenopausal women who do not have adequate estrogen levels. (a) If not enough calcium can be obtained from the diet (dairy products, leafy green vegetables), reach the recommended intake by taking a calcium supplement (not containing iron or fiber) in 250 to 500 mg doses. (b) Another nutrient plays a major role in helping the body absorb calcium: vitamin D. Getting at least 15 minutes of sun exposure daily will help the body form its supply; certain foods (fortified milk, liver, and tuna) or a supplement may be needed to reach the recommended level of 400 IU daily, especially for women in northern climes. (c) Hot flashes can also be helped by watching the diet. Cut down or avoid the known "flash-inducers" such as spicy foods, hot drinks, caffeine, and alcohol. (d) Yes, controlling weight is very important. In fact, if a woman is more than 30% overweight, she's at risk for heart disease --even if she has no other risk factor. In reaching an ideal weight, pay particular attention to keeping fat off the waistline and tummy, the most dangerous fat locations for heart health.

3) Yes, prolonged stress can severely impact health. As women enter midlife, they may encounter increased stress or different stressors than in their younger years. Changes in the family structure and/or the workplace, illness of death of loved ones, and financial difficulties are only a few of the many possible causes of tension. Many women can benefit from stress-reduction strategies such as exercise or meditation. Some women also report fewer hot flashes when they engage in meditation, yoga, massage, or even just a leisurely bath.
4) There are also many "natural treatments for both menopause and menopausal symptoms. These include certain ethnic diets, herbs, natural hormones, and combinations of vitamins and minerals. One of the very hot topics in the last year has been the used of natural progesterone. There are many sources of progesterone cream currently on the market. Another hot topic is the use of DHEA, an adrenal hormone, for energy and to prevent aging. While many of these therapies have not been subjected to rigorous scientific study, there may be some validity in certain of these approaches. Other methods are pure quackery and when these approaches are looked at closely, it is apparent that the same benefits would be obtained by the principles of general sound health management outlined above. Many of these methods are very costly. Excessive expenditures on these untested and homeopathic remedies may actually do harm since the resources of the family are diverted from more cost efficient approaches to sound health. Just because someone labels something with the contemporary "buzz words" for something good, such as "natural" or "holistic" does not necessary mean it is better than your common sense or what well meaning people have worked hard on for many years to understand.

Menopause is a transitional change in a women’s life. She faces severe problems during this time. The episode of mood changes and out bursts of anger not only affects the females but upsets the family members as well. The subsequent events may lead to depression. According to Gharekhan (2005) yoga can be of help to the women by virtue of its asanas and pranayams (breathing techniques). Yoga modifies the endocrine systems from within and helps the patients to cope up with the changing hormonal patterns. As an exponent and teacher of Yoga the author have managed to treat few menopausal ladies only with yoga and have found it to be remarkably useful.

According to Jackson (2005), stress urinary incontinence is the most prevalent form of urinary incontinence. In spite of its significant negative impact in quality of life less than one-third of patients in the UK present with symptoms to their GP (general practitioner). The current mainstay treatment is
pelvic floor exercises. Previously, the only option available to patients for whom conservative treatments were not effective has been surgical intervention. However, recent developments have led to the first selective serotonin and noradrenaline reuptake inhibitor that has proved effective in the treatment of stress urinary incontinence.

Patni (2005) conducted a study in Jaipur to see the effect of treatment of induced menopause in patients who had completed treatment of different female genital cancers. 50 females in the age group of 45 and 55 years were given the indicated treatments and followed up for one year. The change in estrogen deficiency symptom score was noted at six month and one year, and change in BMD values at end of one year. The results showed that 66.66% patients showed 75-100% improvement in symptoms in both CEE as well as combination treatment. BMD showed 4-11% improvement in patients and there was higher rise in BUD with combination treatment as compare to women taking single treatment. The researcher concluded that it is mandatory to maintain the quality of life of treated cancer patients taking into consideration various parameters.

Shah (2005) studied 100 patients in peri-menopausal age group of 40 years and above in Ahmedabad city. For dysfunctional uterine bleeding (DUB) complains otherwise healthy women do not accept surgery at mid forties and hormonal therapy have side effects as well is not beneficial for long-term. So lesser invasive method, of thermal balloon ablation proved to be effective and popular. The overall success rate was found to be about 95%.

According to Weiss and Weiss (2005) at some point in every woman's life, her hormone production drops below the level required to continue her periods. Some women welcome the end to monthly bleeding, bloating, and inconvenience. But others find that menopause affects: their sex life triggers mood swings, causes debilitating hot flashes, or even takes them down the road to bone and heart problems. There are different kinds of menopause. If you have breast cancer, it is important to understand which kind of menopause you may be experiencing: natural menopause, a normal part of the aging process medical or surgical menopause that is the result of chemotherapy or ovary removal "cold turkey" menopause that is the result of being taken off menopausal hormone therapy after you were diagnosed with
breast cancer. But the good news is that there are ways to manage symptoms and live more comfortably with menopause. You can do many things to help ease your way through menopause. Lifestyle modifications (diet, exercise, smoking cessation, and attitude) may be just as important and effective as medications in helping you feel better and live longer.

According to Krishna and Shah (2004), estrogen deficiency affects the physical and mental health of the woman at menopause. From the earliest vasomotor symptoms to the psychological effects, the drying of the vagina and the skin and to the subsequent sexual and urinary problems, estrogen deprivation follows a pattern of well-defined chronological symptoms. Prompt hormone replacement therapy of early climacteric symptoms will lead to better patient compliance for the long-term therapy necessary for the prevention of complications later in life.

In 2004 Mishra et. al. conducted a study, to determine the effect of calcium supplementation on blood pressure and on serum lipid profile. The serum lipids are the precipitating factors of cardiac problem. Recently several Ca++ ionospheres have been studied in this concern. These X-537-A or 231187 increase the permeability of cell membranes to Ca++ ions, at the same times the Na++ leaves the cell in the same quantity. Thus, this ‘leaving’ of Na++ at cellular level greatly helps in the management of ‘hypertension’, which is supported by the serum Ca++ levels. In this way management of hypertension only with Na++ ions fails or doesn’t show much effect. So, these new findings discredit the sodium theory, because sodium reduction doesn’t work for every one. Even traditionalists realize that only about 80% of those with high blood pressure can control it through Na restriction alone otherwise in maximum cases maintenance of serum calcium level simultaneously is also essential. Calcium also exerts positive effect on serum lipid profile and in the present study it is found to reduce the ‘lardy’ cholesterol-LDL significantly. The blood pressure, serum calcium level total lipid profile – HDL, LDL, Triglyceride and Cholesterol were measured in the study groups. After Calcium supplementation significant change was observed in blood pressure and lipid profile.

The results of the million women study were published in the August 9, 2003 issue of The Lancet. Cancer research UK, epidemiology unit in Oxford,
England, reviewed medical data from over one million women ages 50 to 64 years, who enrolled in the study between 1996 and 2001. Approximately 50% of the women were using or had used HRT. The million women study included 9,364 cases of invasive breast cancer and 637 breast cancer deaths over the follow-up periods 2.6 years and 4.1 year respectively.

As stated by Chandra (1998), the role of HRT in relieving symptoms of the menopause has been fairly well-established. For the problems related to menopause, HRT is beneficial in the relief from vasomotor symptoms, prevention of osteoporosis and prevention of cardiovascular disease. However, similar conclusions cannot be drawn regarding the beneficial effects of HRT on psychological symptoms. The only situation in which HRT has a definite role in ameliorating psychological symptoms is in surgical menopause (i.e. following a hysterectomy with bilateral oopherectomy or in primary ovarian failure). In surgical menopause, HRT appears to have a two pronged approach. First, it causes a ‘domino effect’, i.e., it improves well-being by ameliorating physical distress. More importantly, however, it improves sleep, cognitive and sexual functioning and has a definite beneficial effect on mood.

Coulam (1981) stated that whatever psychological problems existed during the menopause, arising from the physiological ageing process and environmental factors, may be exacerbated in some women by estrogen deficiency and its effects. Since the nature and extent of the possible role of estrogen decline has not been demonstrated, hormonal therapy is likely to be effective only when other possible origins of psychological symptoms have been excluded.

In addition to the clinical studies, there have been investigations of the possible mechanisms of the protective effect of progestogens. A study by Natrajan et.al. in 1981 found that a group having estrogen unopposed by progestogen had changes in cytoplasmic oestradiol and progesterone receptors, whereas a progestogen – opposed group were no different from controls.

Vaughn and Hammond (1981) stated that estrogen appears to be the most specific therapy and is thought to be more effective than other treatments. It was not certain whether estrogen therapy also significantly decreases the incidence of fractures in estrogen deficient women. Since the
urethra and the vagina have a common origin in the uro-genital sinus, they are very similar with regard to the squamous epithelium and the effects of estrogen on both can be assessed by cytological investigation. It can be shown that estrogens have a proliferative effect on the vaginal and the urethral epithelium and on elastic and connective tissues. Hence the mechanisms of the therapeutic effect of estrogens on the symptoms of urogenital atrophy seems.

Hammond et.al. in 1979 studied younger women (mean age about mid 40s) who received estrogen replacement after loss of endogenous estrogen production for various reasons, including menopause; this gives some evidence that both osteoporosis and fractures were decreased.

As stated by Hammond et.al. in 1979 there is good evidence that with the periodic addition of progestogens and with careful dosage of ‘natural’ estrogens the increased risk of cancer of the uterus is reduced or abolished.

Jacobs in 1979 stated that natural progestosterone limits the impact of estrogen on the endometrium by two different actions. It increases the rate of conversion of estradiol to estrone which, being a weaker estrogen, does not give rise to proliferation and hence to hyperplasia in the endometrium. Progesterone also directly inhibits the synthesis of estrogen receptor proteins.

According to Thom et.al. in 1979 there is good evidence that with the periodic addition of progestogens and with careful dosage of ‘natural’ estrogens the increased risk of cancer of the uterus is reduced or abolished.

Nachtigall et.al. in 1979 conducted a prospective 10-year study of post-menopausal women, and found that estrogen therapy had a significantly preventive effect on the fracture rate.

Lindsay et.al. in 1978 found that there is a great disadvantage in the use of estrogens for prevention of bone loss if the treatment, no matter how prolonged, is ended there follows an alarming decline in bone mass. The figure shows the extent of this effect and makes it clear that, in the present state of knowledge, estrogen therapy for bone loss must be continued indefinitely. Whitehead, McQueen, Minardi and Campbell (1978) pointed out that the term hormone replacement therapy (HRT) is imprecise since the doses of estrogen which are required for effective relief of symptoms are higher than natural levels; also estrone rather than estradiol becomes the
predominant estrogen compound. The levels of FSH and LH are not decreased to pre-menopausal values and prolactin is not increased to those levels. The treatment therefore does not reinstate the hormonal milieu, which existed before the menopause.

Campbell and Whitehead (1977) stated that vaginal dryness, dyspareunia and in certain cases, presumably where it is secondary to vaginal changes, loss of libido, are improved by estrogen therapy. Observed decreases in blood pressure, and pulse rate with estrogen therapy seem to be secondary to a reduction of anxiety, since they are also obtained with placebo. There is no firm evidence that estrogen therapy has a direct beneficial effect on most psychological symptoms, though these may improve in the wake of a reduction in distressing physical symptoms and a general increase in well being with the therapy.

According to Studd, Chakravarti and Oram (1977) vasomotor symptoms, particularly hot flushes and night sweating, are relieved by the administration of estrogen. Symptoms, which are probably secondary to these symptoms, such as insomnia and poor concentration, are also helped. Vaginal dryness, dyspareunia and in certain cases, presumably where it is secondary to vaginal changes, loss of libido, are improved by estrogen therapy. There are no firm evidences that estrogen therapy has a direct beneficial effect on most psychological symptoms, though these may improve in the wake of a reduction in distressing physical symptoms and a general increase in well being with the therapy.

Thus, various studies done within our country and outside showed how important is it to take care during this stage of females' life. The female body is undergoing various physiological as well as psychological changes during this stage and the extent of changes and type of changes differ with every individual. The various studies cited in this chapter showed that there is still a vast gap in the information regarding this aspect of female life, as with varying physiological makeup, psycho-social environment, and so on, the degree, intensity and type of problems faced by an individual differs to a great extent. And so, it becomes all the more important to conduct this kind of study which takes into consideration the awareness of females regarding this aspect of
their present life and the problems faced by them, which they might not be knowing, are caused due to menopause.

The review of literature helped the researcher to understand the subject more clearly and scientifically. It also threw light on various researches conducted in the area, their methodology and findings. The studies reviewed pointed out an interesting feature of menopause which could be quoted as follows:

M -- Menses Case
E -- Estrogen Falls
N -- Neurology Disables
O -- Ovaries Fail
P -- Palpitations Disturb
A -- Amenorrhora Ensures
U -- Uro-urgency Manifests
S -- Sleep Lacks
E -- Eyesight deteriorates