

ORGANIZATION OF THESIS

Further chapters of the thesis are presented in following four chapters.

Chapter II – Review of literature – presents an overview of the related literature and research studies.

Chapter III – Methodology – deals with methodology, plan of data collection and actual data collection.

Chapter IV – Analysis and interpretation of the findings.

Chapter V – Summary – includes brief summary of findings, discussion, conclusion based on the study findings, implications, limitations and recommendations for further study. The report also contains abstract, references and appendices.

CHAPTER 2

Review of Literature

Review of literature is a key step in the research process. It refers to an extensive and systematic examination of publications relevant to the research problem. In this study the review of literature is presented under following headings:

- 2.1. Menopause and its prevalence
- 2.2 Symptoms of Menopause
- 2.3 Selected physical components (symptoms and long term consequences) of menopause
- 2.4 Quality of life and Health related quality of life associated with menopause
- 2.5 Measures to relieve symptoms of menopause
- 2.6 Knowledge of women regarding menopause and need for education during perimenopause.
- 2.7 Impact of health education in improving quality of life during menopause .

2.1 Menopause and its prevalence

Menopause is a natural step in aging process. It occurs gradually in women and indicates the transition from the reproductive to the post productive era of a woman's life⁷. In 1990, it was estimated that there are 467 million postmenopausal women worldwide. This figure is expected to increase sharply over the next 40 years to total of 1200 million by 2030. In the literature on menopause, it has often been stated that it is a difficult period in women's life with many symptoms³⁹.

The scientific meaning of menopause is "the last menstruation" and usually the median age at menopause is 45 to 55 years. According to World Health Organization (WHO)⁴⁰ meeting in Geneva in 1980, the scientific group defined natural menopause as no menses for 12 consecutive months with no obvious intervening cause, such as pregnancy, lactation, exogenous hormone use, dietary deficiencies or surgical removal of uterus or ovaries.

Definitions developed by the WHO in 1996 have experienced widespread use and are as follows¹¹:

1. "The term *natural menopause* is defined as the permanent cessation of menstruation resulting from the loss of ovarian follicular activity. Natural menopause is recognized to have occurred after 12 consecutive months of amenorrhea, for which there is no other obvious pathological or physiological cause. Menopause occurs with the final menstrual period (FMP), which is known with certainty only in retrospect as a year or more after the event.

2. The term *perimenopause* should include the period immediately prior to menopause (when the endocrinological, biological, and clinical features of approaching menopause commence) and the first year after menopause.
3. The term *menopausal transition* should be reserved for that period of time before the FMP when variability in the menstrual cycle is usually increased.
4. The term *premenopause* should be used to refer to the whole of the reproductive period up to the FMP.
5. The term *induced menopause* is defined as the cessation of menstruation which follows either surgical removal of both ovaries (with or without a hysterectomy) or iatrogenic ablation of ovarian function (e.g., by chemotherapy or radiation).
6. The term *post menopause* is defined as dating from the FMP, regardless of whether the menopause was induced or spontaneous.
7. Ideally, *premature menopause* should be defined as menopause that occurs at an age less than two standard deviations below the mean estimated for the reference population. In practice, in the absence of reliable estimates of the distribution of age at natural menopause in populations in developing countries, the age of 40 years is frequently used as an arbitrary cut-off point, below which menopause is said to be premature.”

The onset of menopause is determined by two factors: the number of eggs formed in the female ovary during the foetal period of development and the rate of loss of those same eggs across the lifespan through the process of ovulation and degenerative atresia⁴⁰. Thus the lifespan perspective views menopause as an outcome of many intrinsic (biological/genetic) and extrinsic (environment, diet, population density, culture, and society) factors. The biology of the human female reproductive system begins when the

human female is born with a fixed number of potential ova with no new germ cells produced after birth. The fixed numbers of primary oocytes (approximately 1 million) are maintained in a state of meiotic arrest until ovulation and fertilization. The vast majority of these primary oocytes degenerate between birth and menopause, with only about 400 being ovulated during the reproductive years. According to this biological explanation, the proximate cause of human female's menopause is the exhaustion of ovarian oocytes, accompanied by degenerative changes in reproduction-associated elements of the neuroendocrine system. The age at menopause is determined by the number of oocytes in the ovaries at birth and the rate of follicular atresia across the lifespan that is affected by that chemical, immunological, and hormonal environment of the ovaries. Menstruation ceases when the quantity of the remaining follicles falls below a threshold number as a result of the gradual loss of the ovaries' ability to release a follicle⁴¹.

A quantitative histologic study of the endometrium and a randomly selected ovary were coupled with a single hormonal measurement and a reproductive history, from each of 17 women aged 44 to 55 years who underwent oophorectomy and hysterectomy for uterine leiomyomas or menorrhagia. The six women who reported regular cycles had an average of 1700 follicles in the selected ovary compared with an average of 180 follicles in the ovaries of those who reported irregular cycles. Evidence such as this suggests that regular follicular activation is altered during late reproductive life⁴⁰.

The menopausal transition is a progressive endocrinologic continuum that takes reproductive-aged women from regular, cyclic, predictable menses that are characteristic of ovulatory cycles, to a final menstrual period associated with ovarian senescence and

menopause. It is a condition that every woman faces in later life and can have many associated effects, which might disrupt the quality of life¹².

Healthcare workers tend to see menopause from a physiological standpoint, marking the end to reproductive ability and a change in hormone function and health status. However, this time represents a vital life-cycle phase for women, imbued with many personal, social, and cultural meanings. Information on women's experience of menopause in non western, non English speaking and non industrialized countries is limited⁴².

Although menopause is a universal phenomenon, there is a considerable variation among women regarding the age of attaining menopause and the manifestation of menopausal signs and symptoms. Worldwide, the estimates for the median age at menopause range from 45 to 55 years. Biri et al.⁴³

The Indian Menopause Society expert committee realizes that India is a country of great diversity consisting of varied lifestyle of people in the country, the rural and urban divide, the economic imbalance between poor, middle class, affluent and multicultural, multiethnic, multireligious composition of people. Large geographical variations exist with people in plains, hills, deserts who are subjected to different climate and have varied food habits and lifestyles⁴⁴.

The severity of symptoms vary in different societies, women at different ages, working/non-working and educated/uneducated status. These variations are also seen in menopausal characteristics between rural and urban women and the ways in which these characteristics could be predicted from differential sociodemographic variables related to the residential status. Anthropological and cross-cultural studies have challenged the concept of the menopause as a universal phenomenon, with wide variations in the

symptom perception and reporting in women from different ethnic origins living in different countries.

According to the data from National Family Health Survey -2 (NFHS)⁴⁵ projected in order to assess the variations in the levels of menopause in India and its states, by the age of 48- 49, two-thirds of Indian women have attained menopause. There are, however, considerable interstate variations in this regard. In West Bengal (48.4%), Madhya Pradesh (51.9%) and Kerala (53.0%), about half of the currently married women aged 48 - 49 have experienced menopause. Andhra Pradesh, on the other hand, is a state where 82.2 percent of the currently married women of that age group have already attained menopause. There are some states in the country where menopause sets in early (before the age of 40) for a considerable proportion of women. Andhra Pradesh is by far the front runner in this regard, with menopause being reported by 22.1 percent of the currently married women aged 35-39 years and another 12.8 percent of the currently married women aged 30-34 years. Early menopause is also seen in Gujarat and Karnataka, where more than 10 percent of the currently married women below the age of 40 have experienced menopause.

A more recent study based on NFHS-2 data shows that women belonging to the disadvantaged social groups of the country (rural, illiterates, low standard of living, among others) are more likely to experience the early onset of menopause . The data from the National Family Health Survey⁸, conducted in 1988 and 1999, which examined about 90,000 married women ages 15 to 49 across 26 Indian states. The study found that 3.1% of women living in India became menopausal between ages 30 and 34, 8% of women experienced menopause by age 39 and 19% of were menopausal by age 41. The average menopausal age in India is 44.3 years. The study found th at premature menopause was

most common in rural areas, as well as among agricultural workers, women who were illiterate and women who had a low body mass index.

The variation among rural and urban women from eastern India was investigated by Dasgupta D⁴⁶ in this study. The data on sociodemographic variables, reproductive history, and menopausal symptoms were collected from 180 postmenopausal women (rural 110; urban 70) belonging to the Bengali-speaking Hindu ethnic group of eastern India. Bivariate analyses confirmed rural-urban differences in menopausal age and in the reporting of menopausal problems (e.g., vasomotor, psychosomatic, psychological, and urinary problems). Multivariate analyses revealed that rural-urban residential status and duration of breastfeeding of child were significant predictors of age at menopause. Residential and literacy status, duration of breast feeding of child, and husband's awareness about the menopausal status of spouse were significant predictors of some of the menopausal symptoms.

It appears obvious from the results of the study conducted by Nagar S. et al¹⁰. A significant variation was observed in menopause rating scale (MRS) scores with age, working/non-working and educated/uneducated status in a cohort of north-Indian subpopulation and to look for the possible reasons for the incurred variations. MRS is a well-known and validated instrument for assessing the frequency and intensity of menopausal symptoms. A menopause clinic was organized in collaboration with a primary care centre (under the guidance of a gynaecologist). A random sample of 208 women aged 35–65 years participated in the study. The MRS scale, a self-administered standardized questionnaire was applied with additional patient related information (age at menopause, level of education, working/non-working and exercising or not). The results were evaluated for psychological (P), somatic (S), and urogenital (U) symptoms. The

average age, at which menopause set in, in the cohort was found to be 48.7 ± 2.3 years (46.4–51 years). Based on the average age at the menopause, the cohort was divided into peri (35–45), menopausal/early menopause (46–51) and the postmenopausal (52–65) groups. A significantly higher % of perimenopausal women (36%) showed a P score of 7; while a higher % of postmenopausal showed S score and U score 7 (>40%; $p < 0.001$). Working women seem to suffer more from psychological symptoms whereas non-working women showed a greater incidence of somatic symptoms. Educated women showed a lower incidence of psychological and somatic symptoms. Present study indicates that age, level of education and working/non-working status (in a group of women with same socio-cultural background) may also contribute to significant variations in menopausal symptoms.

The prevalence of symptoms differs widely and their relationship with menopause transition varies in relation to their culture race and ethnicity. The Study of Women's Health Across the Nation (SWAN) reports that American women have more psychosomatic symptoms than other racial/ethnic groups and that African American women report more vasomotor symptom, after controlling for age, education, health and economic status Xu J. et al⁴⁷ in their study found that African American women reported significantly more painful sex but did not report more hot flashes, night sweats or vaginal dryness than whites. Among white Americans, loss of sexual interest was the only symptom that remained a significant predictor of menopause after adjusting for age, smoking status, hormone replacement therapy, and memory loss. Among African American women night sweat was the only symptom that remained a significant predictor of perimenopause after controlling for age, fast heartbeat, painful sex and memory loss.

There is an assumption in menopause research that attitudes to menopause are influenced by a range of cultural, social and psychological variables, which may in turn affect menopausal experience and symptom reporting. However, many studies draw conclusions about this relationship without explicitly examining the empirical evidence. Considerable differences are reported among women from varying ethnic background regarding menopause. Many women welcome the physical changes associated with menopause and view it in a positive manner, while others do not.

In other words, researchers in the Study of Women's Health Across the Nation (SWAN)⁴² explored the role the menopause transition played in postmenopausal Latina women, aged 35 to 60 years. Analysis of the session discussions revealed 3 common themes. First, the women identified the need for harmony and balance in their lives to maintain optimal health. This concept of health encompasses not only physical well-being, but also emotional and spiritual dimensions and the importance of family and community relationships. Although menopause changes a woman's physical balance, it is a natural part of life within all of these dimensions. Second, menopause, called "el cambio de vida," or "the change of life," is seen as a natural phase that women must pass through, and many women said they noticed no changes. Even those who complained of symptoms like mood changes and hot flashes rarely sought medical treatment, although home remedies using herbs and teas were common. Third, women viewed this period as a time to reorient their lives in their "golden years" to focus less on the demands of raising a family and more on their personal needs and desires. For many, this time also brought about a renewed interest in intimacy and sex, freed from the worry of pregnancy. Many women in the study stated that the interview sessions gave them an opportunity to share and learn about menopause with other women, and many lacked basic knowledge about the course of menopause and possible ways to manage symptoms. Women in this study

described menopause as a social and cultural phenomenon bringing an important change in their life, but many also expressed a need for more information.

The menopause and its accompanying symptoms can be a powerful trigger for some women to think seriously about their health and how they might look after their bodies in future. All women approaching menopause should have an opportunity to learn about the changes and risks, they may experience and the measures to combat them. Many women look for ways of managing physical effects of the menopause that do not rely on medicine.

2.2 Symptoms of menopause

Women in the menopausal transition commonly report a variety of symptoms, including vasomotor symptoms (hot flashes /flushes and night sweats), vaginal symptoms, urinary incontinence, trouble sleeping, sexual dysfunction, depression, anxiety, labile mood, memory loss, fatigue, headache, joint pains, and weight gain. However, in longitudinal studies, after adjusting for age and other confounders, only vasomotor symptoms, vaginal symptoms, and trouble sleeping are consistently associated with the menopausal transition. Symptoms such as memory loss and fatigue may be due to frequent hot flashes or trouble sleeping¹².

Freeman EF et al⁴⁸ undertook a study to test the hypothesis that prevalence of menopausal symptoms of hot flashes/flushes; aches, joint pain, and stiffness; depressed mood; poor sleep; decreased libido; or vaginal dryness increases with progression through the menopausal transition. Women in the Penn Ovarian Aging Study were assessed longitudinally for 9 years. Data were obtained from structured interviews, a validated symptom questionnaire, menstrual bleeding dates and early follicular hormone measures

(estradiol [E2], follicle-stimulating hormone [FSH], and inhibin b). Menopausal stages were based on menstrual bleeding patterns. Other risk factors included age, race, history of depression, current smoking, body mass index, and perceived stress. Generalized linear regression models for repeated measures were used to estimate associations among the variables with each symptom. The prevalence of hot flushes; aches, joint pain, and stiffness; and depressed mood increased in the menopausal transition. Menopausal stage was associated with hot flushes ($P<.001$); aches joint pain, and stiffness ($P<.001$); and depressed mood ($P=.002$). Within-woman fluctuations of E2 were associated with hot flushes and aches. Poor sleep, decreased libido, and vaginal dryness were not associated with menopausal stages. There was 80% power to detect an absolute difference of 11% for libido and vaginal dryness and 17% for poor sleep in the prevalence of these symptoms in the late menopausal transition compared with premenopausal status. The study highlights the role of menopausal stages for some symptoms of midlife women and indicates that stages in the transition to menopause are associated with hot flushes; aches, joint pain, and stiffness; and depressed mood. Fluctuations of E2, decreased levels of inhibin b, and increased FSH levels were associated with these symptoms.

Aaron R, et al⁴⁹ presented a population-based cross-sectional study on perceptions regarding menopause, prevalence of menopausal symptoms and association of family environmental factors with menopausal symptoms among 100 postmenopausal and 100 premenopausal rural women in south India. Fifty-seven percent of postmenopausal women perceived menopause as convenient. Sixty-nine per cent of them complained of diminishing abilities after menopause. Twenty-three percent felt that sexual life ends with the onset of menopause. Sixteen percent reported that their husbands had become disinterested in them after menopause and 11% were apprehensive about the loss of

femininity. A higher proportion of postmenopausal women reported hot flashes/flushes, night sweats, urge incontinence and other somatic symptoms as compared to premenopausal women. Fifty-four percent of postmenopausal and 32% of premenopausal women were currently not sexually active. Fifty-nine per cent of postmenopausal and 38% of premenopausal women expressed loss of sexual desire and this difference was statistically significant. There was no significant association between menopause and depression. A poor perceived relationship within the family was shown to have a significant association with depression. There was a significant association between multiple somatic symptoms and menopause. A significantly higher proportion of postmenopausal women suffer from vasomotor symptoms, urge incontinence, loss of sexual desire and multiple somatic symptoms. They do not link these symptoms with menopause.

[Lyndaker C](#), [Hulton L](#)⁵⁰ used a descriptive exploratory research design using a structured questionnaire to identify differences in the occurrence and severity of symptoms related to perimenopause in women ages 30 to 50 and to determine which of the symptoms were recognized as due to perimenopause and discussed with a health care professional. A sample of women (N = 418) employed in institutions of higher learning and a health care facility participated in the study. The Menopause Symptom List was a 132-question survey used to identify occurrence and severity of symptoms in perimenopausal women, their recognition of the symptoms, and their level of discussion with a health care professional regarding the symptoms. One-way analysis of variance measures were applied to determine the differences between age groups and perimenopausal symptomology. For both the measurement scales of frequency and severity of perimenopausal symptoms, the mean score increased as age increased. Significant differences were found between the age groups for the number of occurrences

of sleeplessness, moodiness ($p < .05$) and depression, and poor concentration ($p < .005$). Significant differences in severity of symptoms were seen between age groups for depression ($p < .05$) and poor concentration ($p < .005$). Depressed feelings, headaches, moodiness, and palpitations were the symptoms most frequently discussed with health care providers. Conclusions: Although the vaso-somatic symptom of headache ranked first for severity, the most frequently reported symptoms were psychological or general somatic in nature. Despite a proliferation of health education materials, the subjects in this study did not recognize many symptoms of perimenopause. The results of this study suggest that education and anticipatory guidance for perimenopausal women should begin with women in their 30s. With many symptoms occurring as early as age 35, recognition of symptoms can greatly reduce the discomfort and fears that women experience during the perimenopausal transition.

Syed AS et al.⁵¹ conducted a study to determine the commonly reported menopausal symptoms among Sarawakian women using a modified Menopause Rating Scale (MRS). Methods: By using modified MRS questionnaire, 356 Sarawakian women aged 40-65 years were interviewed to document 11 symptoms (divided into somatic, psychological and urogenital domain) commonly associated with menopause. Results: The mean age of menopause was 51.3 years (range 47 - 56 years). The most prevalent symptoms reported were joint and muscular discomfort (80.1%); physical and mental exhaustion (67.1%); and sleeping problems (52.2%). Followed by symptoms of hot flushes and sweating (41.6%); irritability (37.9%); dryness of vagina (37.9%); anxiety (36.5%); depressive mood (32.6%). Other complaints noted were sexual problem (30.9%); bladder problem (13.8%) and heart discomfort (18.3%). Perimenopausal women ($n = 141$) experienced higher prevalence of somatic and psychological symptoms compared to premenopausal ($n = 82$) and postmenopausal ($n = 133$) women. However

urogenital symptoms mostly occur in the postmenopausal group of women. Conclusions: The prevalence of menopausal symptoms using modified MRS in this study correspond to other studies on Asian women however the prevalence of classical menopausal symptoms of hot flushes, sweating was lower compared to studies on Caucasian women.

A pan Asia menopause study from 11 Asian countries or regions indicated that 99.4% of the perimenopausal women had experienced the symptoms of menopause during the menopausal transition⁵². Another survey conducted in 7 European countries reported that almost all perimenopausal women had experienced menopausal symptoms⁵³.

A research from the first phase of the Study of Women's Health Across the Nation (SWAN) in Boston⁵⁴, United States, suggested that common symptoms of menopause also differ by ethnicity. There are differences in the severity of common symptoms experienced by different nations. This factor can also be studied in a Malaysian concept as it is a multiracial society where 45% of the populations are Malays, 41% are Chinese and 14% are Indians. Jahanfar Sh. et al⁷. This was a cross sectional study. Subjects were recruited from Greentown clinic in Ipoh city in the state of Perak in Malaysia. Simple random sampling method applied to recruit 70 subjects needed for the study. Sixty nine percent of the subjects were Malay, 20% Indian and 11% Chinese various menopausal symptoms reported by the subjects. The results revealed that only 2 subjects (2.9%) reported no menopausal symptoms. The most common symptom was found to be joint and muscle discomfort with the prevalence of 84.3% followed by anxiety (71.4%), physical and mental discomfort (67.2%), hot flashes and sweating (67.1%), irritability (65.7%), sleep problem (64.35), mood problem (62.8%). Heart problem (49.7%), dried

vagina 942.85), bladder problem (41.5%) and sexual problem (21.4%) were found to have a prevalence rate of less than 50%. The mean value of total score of menopausal symptoms was 12.53 ± 7.36 SD.

Bairy L et al.⁵⁵ undertook a cross sectional study on 352 postmenopausal women attending the outpatient clinics of a tertiary care hospital in southern India. It was conducted to establish the age at onset of menopause and prevalence of menopausal symptoms in southern Indian women. The menopause Specific Quality of life questionnaire was used in the study. Results revealed that the mean age at menopause was 48.7 years which is comparable to the report of Sharma and Singh. However there is a wide range in mean age at menopause in Indian women (40.3 to 48.8 years) as well as in developed countries (48.0 to 51 years) which is four years more than the mean menopause age for Indian women. Data revealed a high prevalence of physical symptoms than other domains like aching in the muscles and joints (67.7%) feeling tired (64.8%), poor memory (60.5%), lower backache (58.8%), feeling bloated (55.1%) and difficulty in sleeping (51.7%) as common complains. These data are consistent with previous studies conducted in Asia. Studies reported that physical and psychological symptoms were highly significant in Asian women.

Sharma S et al.³⁰ carried out an observational cross sectional study in urban women (n= 117) with natural menopause to evaluate menopausal symptoms in women above age of 40 years belonging the middle socioeconomic strata in Jammu, India and the correlation of age on these symptoms. The study revealed varying nature of symptoms with age and mean duration since menopause (MDSM) with vasomotor symptom being the more prevalent with lesser MDMS and psychological and rheumatic complains more prevalent with increasing age and MDMS in this region. The most frequent menopausal

symptoms in the age group of 40 – 44 years were fatigue, lack of energy (88.8%), headache (77.7%), hot flashes, cold sweats, cold hand and feet, numbness/ tingling and excitability/ anxiety (66.6%) each respectively. In the age group of 45 – 50 years fatigue, lack of energy (70%), cold hand and feet (60%), hot flushes, cold sweats, weight gain, irritability and nervousness (50%) were the common complains. Whereas rheumatic pains, fatigue, lack of energy (60%) followed by headache, pain in back, forgetfulness, neck and skull pain (50%), sleep disturbances and depression (45%) were frequent symptoms in the age group of > 50 years.

Nagar&Dave¹⁰ explored the physiological health problems as perceived by women during middle age, women between the age group 39 – 52 years belonging to middle socio economic class from Baroda city of Gujarat, India were included in the study. These women were either undergoing menopause or had attained menopause in last 5 years. The sample was selected through snow ball technique. A checklist was used to know the frequency and intensity of various physiological problems as perceived by women. The study group reported different problems like backache 100% head ache 92% uneasiness 89% profuse perspiration 84% pain in joints 83%and hot flashes 89%. It was also seen that women who were undergoing the changes of menopause seem to be affected more by the extent of problem faced at menopause.

Berg JA et al.⁵⁶ conducted this study. It was to describe symptom perception and severity in mid-life women volunteering for an intervention study for menopause symptom management. A cross-sectional descriptive design was used to provide data on presenting symptoms in a sample of women negotiating the menopausal transition. A community-based sample of Caucasian women aged 43–55 years was recruited from national nursing media, local media and a variety of local community sources. A

screening questionnaire was administered to determine qualification for study entry based upon symptom severity scores from the questionnaire. This report includes results from the screening questionnaire. One hundred and sixty-five women were screened to obtain 110 qualified participants with mean age of 49.3 SD 3.04 years who were 4.07 SD 7.0 months past their last menstrual period. Sleep difficulties, forgetfulness and irritability were perceived by the highest number of women while sleep difficulties, night sweats, irritability and forgetfulness were rated the most severe. Findings from this study expand understanding of the menopause symptom experience, because few reports include symptom severity reports.

The symptoms of perimenopause affect women's health status and have been associated with decreased quality of life, impaired work performance, limitations in physical functioning and perceived declines in health status.

2.3 Selected physical components (symptoms and long term consequences) of menopause

The signs and symptoms of menopause are classified as short term, medium and long term according to the time they appear. The short and medium term symptoms include hot flashes, night sweats, sleep disturbances, vaginal symptoms, urinary problem, sexual dysfunction, joint pain, and weight gain and long term as cardiovascular disease and osteoporosis.

Two third of women may experience some level of vasomotor symptoms, such as hot flashes and night sweats in the years around the menopausal transition, but only a small number will feel discomfort at a level that significantly diminishes their quality of life. Even so, the focus of scientific research and attention has been directed to one third

of women whose menopause related complaints are sufficient to warrant medical intervention, chiefly hot flashes¹³.

Hot flashes/flushes are commonly defined as transient periods of intense heat in the upper body, arms, and face, which are often followed by flushing of the skin and profuse sweating. Many hot flashes are followed by chills and often are accompanied by palpitations and a sense of anxiety. Hot flashes are considered to be the hallmark of the menopausal transition in midlife women, but they may occur at other times of life in both men and women⁵⁷.

Hot flashes/flushes and night sweats are considered primary menopausal symptoms that may also be associated with sleep and mood disturbances, as well as decreased cognitive function. Hot Flashes are commonly at their worst in the two or three years before periods stop, but they may continue for many years afterwards. The women suffer from sudden waves of body heat with sweating and flushing that last 5 –10 minutes, often at night as well as during the day. They typically begin in the scalp, face, neck, or chest and can differ dramatically among women who have them; some women feel only slightly warm, while others end up wringing wet. The condition improves within a few months in about 30 to 50% of women and resolves in 85 to 90% of women within 4 to 5 years. However, for unclear reasons, about 10 to 15% of women continue to have hot flushes many years after menopause⁵⁸.

Hot **flashes** /flushes may also be accompanied by palpitations, anxiety, irritability, and panic. They often negatively impact the quality of life for women by causing sleep disturbances, which often result in fatigue, irritability, forgetfulness, acute physical discomfort, and negative effects on work. Approximately 40%–70% of perimenopausal

women experience hot flashes, and 10% –20% of these women obtain medical attention for treatment. All of these symptoms may lead to social impairment and work -related difficulties that significantly decrease overall quality of life⁵⁷.

Despite the impact of hot flashes on women's lives, few studies have attempted to investigate the etiology of hot flashes and to identify factors that may predispose women to hot flashes. In general, the studies examining the etiology of hot flashes suggest that changes in core body temperature or changes in endogenous hormone levels or both are associated with the onset of hot flashes. The published studies examining factors that may predispose women to hot flashes suggest that endogenous hormone levels, body mass index (BMI), smoking, some reproductive variables (tubal ligation and surgical menopause), and race/ethnicity are associated with risk of hot flashes. The purpose of this paper is to review the current information on the etiology of hot flashes and reported risk factors for hot flashes and to provide speculation about the potential mechanisms underlying hot flashes during midlife. This review focuses only on those risk factors that have been examined in detail in midlife women. As most studies have been conducted in women living in the United States, it is important to emphasize that the work described pertains to these women unless noted otherwise⁵⁷.

Sleep disturbances also have been specifically related to hormonal changes that trigger hot flushes or night sweats, independent of age. A National Sleep Foundation poll of 1,000 women between the ages of 30 and 60 years found that 36% of perimenopausal, postmenopausal, and oophorectomized women experienced hot flushes during the night. In this study, 44% of women who experienced vasomotor symptoms while sleeping were perimenopausal, versus 28% of women who were postmenopausal. The poll also showed that menopausal and postmenopausal women slept less than premenopausal women.

According to the National Sleep Foundation, women with night sweats experienced an average of three occurrences per week. These events disrupted sleep and led to daytime irritability⁵⁸. More perimenopausal and postmenopausal women, than menstruating women have difficulty falling asleep, staying asleep, and achieving refreshing sleep. Insomnia symptoms in women in the various stages of menopause include difficulty falling asleep (29%) and early awakening with an inability to fall back to sleep (21%). Although these and other results have suggested a correlation between the occurrence of hot flushes and sleep complaints in menopausal women, only a few studies have employed objective methods for sleep evaluation (eg, polysomnography, actigraphy, quantitative electroencephalographic analysis). Results from these assessments have indicated that hot flushes correlate with the occurrence of objectively demonstrable sleep disruption in at least some women⁵⁹.

Gold et al⁶⁰: In a cross sectional study 40.4% of post menopausal women reported difficulty sleeping. The disturbances include insomnia, sleep apnoea, and an increased number of nocturnal awakenings. Disordered sleep patterns are often accompanied by reports of fatigue and loss of concentration during the day. Nocturnal hot flushes are often associated with sleep disorders and the subsequent state of fatigue. In another study, perimenopausal and postmenopausal women with vasomotor symptoms had a significantly longer REM latency (measured by polygraph) than women without symptoms. Not only can sleep disturbance affect QOL by contributing to a state of fatigue, but also psychological health may be influenced.

Ohayon MM⁶¹ conducted a study to find out the factors associated with sleep disturbance. A random sample of 3243 subjects (aged > or =18 years) representative of the California population was interviewed by telephone and 982 women aged 35 to 65

years were included in the study. Women were divided into 3 groups according to menopausal status: premenopause (57.2%), perimenopause (22.3%), and post menopause (20.5%). Hot flashes were counted if they were present for at least 3 days per week during the last month and were classified as mild, moderate, or severe according to their effect on daily functioning. Chronic insomnia was defined as global sleep dissatisfaction, difficulty initiating sleep, difficulty maintaining sleep, or non restorative sleep, for at least 6 months. Diagnoses of insomnia were assessed according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, classification. Prevalence of hot flashes was 12.5% in premenopause, 79.0% in perimenopause, and 39.3% in post menopause. Prevalence of chronic insomnia was reported as 36.5% in premenopause, 56.6% in perimenopause, and 50.7% in post menopause ($P < .001$). Prevalence of symptoms of chronic insomnia increased with the severity of hot flashes, reaching more than 80% in perimenopausal women and postmenopausal women who had severe hot flashes. In multivariate analyses, severe hot flashes were significantly associated with symptoms and a diagnosis of chronic insomnia. Poor health, chronic pain, and sleep apnea were other significant factors associated with chronic insomnia. **CONCLUSIONS:** Severe hot flashes are strongly associated with chronic insomnia in midlife women. Treating hot flashes could improve sleep quality and minimize the deleterious consequences of chronic insomnia.

Pien GW et al.⁶² in their study determined the associations between menopausal status, reproductive hormone levels, menopausal symptoms, and poor sleep quality. The study examined subjective sleep quality over an 8-year period in participants in an ongoing longitudinal study of ovarian aging in a randomly identified cohort of African American and Caucasian women. The Penn Ovarian Aging Study is of a population-based cohort of 436 women from Philadelphia County who were 35 to 47 years of age

and had regular menstrual cycles at enrolment. The primary outcome measure was the Sleep Quality factor score, derived from the St. Mary's Hospital Sleep Questionnaire, which was adapted for this population and collected at each assessment period over the 8 - year follow-up. Associations between menopausal status, reproductive hormone levels, menopausal symptoms, sleep quality, age, and race were examined in multivariable linear mixed regression models for repeated measures. Menopausal status was not significantly associated with sleep quality ($P = 0.12$). In the adjusted model, independent predictors of sleep quality were hot flashes ($P < 0.0001$), Center for Epidemiological Studies Depression Scale scores ($P < 0.0001$) and levels of the reproductive hormone inhibin B ($P = 0.05$). Sleep quality was predicted by hormone levels and symptoms that occur in the menopausal transition but did not worsen with advancing menopausal status alone. Lower inhibin B levels, hot flashes, and symptoms of depression were all strong and independent predictors of difficulty in sleeping. Race was not a significant contributor to sleep quality. Together, the findings demonstrate that women who experience other perimenopausal symptoms are likely to experience sleep problems during the menopausal transition.

Worldwide, complaints of musculoskeletal pain are more frequent than complaints of hot flashes amongst women of menopausal age. Joint Pain can begin before menopausal years and become more troublesome during these years. It is thought that more than half of all postmenopausal women experience varying degrees of joint pain. Knee, elbow and shoulder joint pains are most frequently experienced, while aching in hips, lower back, or wrists often signal deeper distresses such as worsening osteoporosis, kidney weakness or immune system dysfunction⁶³. Physical symptoms were found highly significant in Asian women by Bairy L et al⁵⁸. This study also reported that women in the study complained more about physical symptoms than other domains. More than 50% of

women complained of aching in muscles and joints and lower back ache. These data are consistent with previous studies conducted in Asia. Malaysian study also found that joint and muscular discomfort was predominantly complained by 86.6% women. Jahanfar Sh. Et al⁷ reported that more than 97% of subjects experienced at least one of the menopausal symptoms the three most common of which were joint and muscular discomfort 84.3 % anxiety 71.4% and Hot flashes 67.1%. Sixty percent of subjects had moderate to severe menopausal symptoms. This proves that menopausal symptoms are common and cannot be ignored. However many of these symptoms are either ignored or not spoken of.

The medium term effects of menopause represent urovaginal symptoms. The tissues of the lower vagina, labia, urethra and trigone derived from a common embryonic origin, the urogenital sinus. They are all estrogen dependent. Falling estrogen level leads to drop in vaginal and vulval blood supply. Estrogen deprivation results in atrophic changes in these tissues, leading to vaginal and urinary symptoms that severely diminish the QOL for older women⁶⁴.

Urinary incontinence is a result of atrophic changes similar to those of the vagina. Dysuria, urgency, frequency and suprapubic pain may occur in the absence of infection. In addition, the menopausal loss of resistance to urinary flow by thick, well vascularised urethral mucosa has been hypothesized to contribute to urinary incontinence. Prevalence estimated in midlife women range from approximately 5% for severe to 60 % for mild incontinence⁶⁵.

Globally, urinary incontinence affects the quality of life of at least one third of women. Many women are too embarrassed to talk about it and some believe it to be untreatable even in western countries⁶⁶. This problem is more pronounced in India, where women usually do not seek treatment for their reproductive health problems and do not

vocalize their symptoms. There is a “cultural of silence” and low consultation rate among Indian women regarding such problems. Women in India have also been reported to have high tolerance threshold for seeking treatment. Embarrassment, shyness lack of money / time, fear of surgery and pain are usually the reasons given by women for nonconsultation. Urinary leakage reported by some women during menopause is particularly distressing in social situations and affects self perception and Quality of life³⁶.

Oskay UY et al⁶⁷ performed a study to determine the prevalence of urogenital complaints in postmenopausal women aged 50 and over. The study was carried out in the city of Istanbul on women within the age range of 50 and over. The statistical figures for these women were obtained from the latest national census. The number of sampling was determined to be 500, each representing a population of 10 000 women. Thus, the sampling consisted of 500 postmenopausal women who had applied to various health centers either to seek remedy for their health problems other than urinary incontinence (UI) or to accompany inpatients. Women in the surgical stage of menopause were excluded from the study group. A specifically designed questionnaire was used to gather data on urogenital complaints. The data obtained by this means was analyzed according to Thomas criteria, which classifies incontinence as rare, regularly and serious. UI was defined according to the International Continence Society (ICS) classification. Of the interviewees 68.8% reported UI, 28.8% of whom had serious UI requiring continuous use of a pad. It was determined that 37.2% of the women with UI had stress incontinence symptoms, 32.3% urge incontinence symptoms, and 30.5% mixed incontinence. Of the women 46.5% had UI problems for 5 years or longer, and 75% reported that their complaints had started after menopause; 18.2% of the women suffered from vaginal discharge and pruritus, while 23% experienced vaginal dryness; 51.2% of the

women were sexually active. However, 83.6% of this group of women reported a decrease in sexual desire and frequency of intercourse. Likewise, 78.1% experienced a decline in sexual satisfaction, 77.7% difficulty in having orgasm, and 45.3% dyspareunia. Logistic regression analysis showed that existence of a chronic illness, frequent urethral infections, a high value of body mass index and chronic constipation increased the prevalence of UI. Urinary incontinence and sexual problems, particularly decline in sexual desire, are widespread among postmenopausal women. Frequent urinary tract infections, obesity, chronic constipation and other chronic illnesses seem to be the predictors of UI.

Vaginal Symptoms are the consequences of estrogen loss on urogenital health. Atrophy symptoms of the vagina include a friable vaginal lining that is more susceptible to bacterial infection, resulting in pruritus, stenosis, and dyspareunia. Vaginal epithelial cells contain less glycogen, which before menopause, had been metabolized by lactobacilli to create acidic pH, thereby protecting the vagina from bacterial overgrowth. Loss of this protective mechanism leaves the thin, friable tissue vulnerable to infection and ulceration. Vaginal symptoms (including dryness, discomfort, itching, and dyspareunia) are reported by about 30% of women during the early postmenopausal period⁴ and up to 47% of women during the later postmenopausal period.³ Unlike hot flashes, vaginal symptoms generally persist or worsen with aging⁶⁸.

Vaginal atrophy and dryness is a common symptom in perimenopause. In a longitudinal study⁶⁸ of 438 Australian-born women observed over 7 years, vaginal dryness was noted to increase nearly five-fold as women advanced through perimenopause. Vaginal dryness was a complaint in 3 percent of premenopausal women and 4 percent of women in early perimenopause. However by late perimenopause, 21

percent of women complained of vaginal dryness and this percentage 49 increased up to 47 percent 3 years following menopause. The link between vaginal dryness and low estrogen levels is clear, as estrogen levels drop precipitously in late perimenopause as compared to early perimenopausal women.

Sexual Symptoms, during perimenopause and menopause may be secondary to vaginal dryness such as dyspareunia and vaginismus. Sexual intercourse may be painful and therefore contribute to the compromised sexual satisfaction, diminished libido and sexual decline at midlife. Women who have recently entered menopause report a reduction in interest for sex over the previous year at the rate of nearly twice that of other women. Previous surveys have shown that women expect to maintain a high level of health and quality of life during their postmenopausal years and most women consider sexuality to be an important component to perceived quality of life⁶⁹.

Sexual behaviour has generally been found to change with age and menopause may have an impact on some aspects of sexuality such as sexual interest and desire whereas satisfaction with the sexual relationship has not been found to correlate with either menopause or age. In a prospective cohort study, women's sexual function was found to be more dependent on prior sexual function and relationship factors than on aging and hormonal factors. Another important factor highly associated with distressing sexual dysfunctions in women is sexual dysfunction of the partner. Culture has been shown to impact sexual attitudes and sexual behaviour and societal beliefs may play a role in the way women perceive sexual changes during ageing and as a result influence the way women answer sexuality questionnaires for diagnostic purposes. Two cross sectional studies have been performed on women's sexual functioning during midlife in various European countries however, none of these studies has investigated a woman's

opinion and perception of sexuality around mid-age. The prevalence and significance of sexual problems in women, including its medicalisation, have been an ongoing debate. In the last decade, the impact of sexual dysfunction and its association with impaired QOL have been recognized as a public health concern⁷⁰.

Nappi, RE⁷¹ summarizes the available knowledge on the prevalence of sexual symptoms at menopause and their impact on quality of life in elderly women. Sexual changes are analyzed in the context of the menopause transition and beyond. The medical literature was searched (1990-2008) with regard to menopause and sexuality using several related terms. The prevalence of sexual symptoms at the menopause differs across studies depending on several factors such as sample size, design, hormonal status and country. The most common sexual complaints are reduced sexual desire, vaginal dryness and dyspareunia, poor arousal and orgasm and impaired sexual satisfaction. Age and declining oestradiol levels have significant detrimental effects on sexual functioning, desire and responsiveness (arousal, sexual pleasure and orgasm) across the normal menopause transition, while reduced androgens levels played a role in hypoactive sexual desire disorder (HSDD), a symptom frequently diagnosed in surgically menopausal women. Conclusions: Women attending menopause clinics are vulnerable to female sexual dysfunction (FSD) because of a complex interplay of individual factors variably affecting well-being. Surgically menopausal women may be more distressed by sexual symptoms. Giving women the opportunity to talk about sexual problems is a fundamental part of health care and may improve their quality of life.

During mid-life, a woman's body tends to change from a pear shape (hips wider than waist) to a shape more like an apple, with the waist approaching the same size as the

hips. Abdominal weight gain increases the risk of heart disease. Numerous studies have shown that menopause and weight gain go hand in hand. There are probably many different factors that cause weight gain during menopause, but some studies suggest that the weight gain is related to decreased estrogen levels ⁷².

Oestrogen deficiency seems to play a role in the menopause-related changes in body composition, but life styles (diet, exercise, smoking habits, alcohol consumption) are also involved. The time course of the decrease in lean mass deserves attention since it could justify specific actions, i.e. exercising or hormonal treatment, early during the perimenopausal period. A decrease in fat-free mass may be responsible for a decrease in energy expenditure favouring weight gain if the calorie intake is not reduced.

The Study of Women's Health Across the Nation (SWAN) ⁷³ followed middle aged women over a 6 year period and documented changes in menopausal status and body composition. The SWAN investigators found that both chronological and ovarian aging played a role in the observed decrease in skeletal muscle mass (~0.23kg) and increase in total fat mass (~0.34kg) and waist circumference (~5.7cm) ². Cross sectional ⁹⁴. studies suggest that, when compared with age -matched premenopausal women, postmenopausal women have more trunk fat as shown by dual x-ray absorptiometry, or DXA3 and even pre and post menopausal women are matched for total abdominal fat as measured by computed tomography, post menopausal women store more of their metabolically deleterious visceral depot. Thus, the increased disease risk associated with menopause transition is likely due, in part, to development of the menopausal middle. Gaining weight is frustrating and health threatening. It can also affect a women's sense of well being. A two year study ⁷² about menopause and weight

gain was recently concluded in Australia. 7,270 healthy women between the ages of 45 and 50 were surveyed concerning their weight and their sense of physical and mental well-being. Only half were able to maintain the same weight with which they began the study. More than one third gained 5 pounds or more. Even this small weight change negatively affected the group's sense of mental well-being. Weight loss is recommended when BMI ≥ 27 . In public opinion, weight loss is associated with better health-related quality of life, and weight gain is associated with poor health and lower quality of life.

Jones GL et al⁷⁴ conducted a study to identify the ways in which obesity affects the health-related quality of life (HRQoL) of postmenopausal women. This was considered important because a growing body of literature has identified obesity as a significant predictor for a poor psychological wellbeing and negative HRQoL, particularly in women, and because during the transition through the menopause women tend to accumulate more body weight. After searching eight electronic databases, only nine papers appeared meaningful. Although a meta-analysis was not possible, we found that a body mass index (BMI) $>30 \text{ kg/m}^2$ was associated with a poor HRQoL in postmenopausal women; particularly in the areas associated with physical functioning, energy and vitality, and health perceptions. Thus, clinical management of obese postmenopausal women should focus on weight reduction and exercise in an attempt to improve wellbeing in these areas. However, the paucity of research, the different instruments chosen to measure HRQoL and the methodological limitations of the studies identified, prevented firm conclusions being made about whether the relationship between BMI and HRQoL is linear in postmenopausal women. Further research is needed to explore this relationship; particularly in comparison with underweight postmenopausal women and obese premenopausal women, where a few papers have identified

underweight women as having a worse HRQoL than their obese postmenopausal counterparts. Other measures of central adiposity, including waist circumference and waist-hip ratio are recommended as useful supplemental measures to BMI in future studies.

Pace G. et al.,⁷⁵ in their study, evaluated the relationship between body mass index (BMI) and female sexual dysfunction (FSD) among perimenopausal and postmenopausal women with urinary incontinence (UI). Methods: From 2005 to 2008, two hundred and eight consecutive women were enrolled who were affected by UI; all underwent a comprehensive history including two validated questionnaires, physical examination, and urodynamic evaluation. Based on BMI, participants were grouped into normal weight, overweight, and obese. Results: A total of 158 participants completed both questionnaires (76% response rate); 41 (26%) were normal weight, 73 (46%) were overweight, and 44 (28%) were obese. The increasing Urogenital Distress Inventory score had a direct correlation with age ($P < 0.01$), year of menopause onset ($P < 0.05$), and BMI ($P < 0.01$). FSD was diagnosed in 97 women (61%): 31 (32%) with hypoactive sexual desire, 20 (21%) with sexual arousal disorder, 7 (7%) with orgasmic deficiency and 39 (40%) with sexual pain disorder. BMI greater than 30 kg/m was independently associated with an increased risk of FSD (odds ratio [OR], 2.02) and UI (OR, 2.03). With adjustment for BMI, the OR for FSD was 1.22 for overweight women and 1.56 for obese women, with respect to healthy participants. The total Female Sexual Function Index score correlated with BMI ($r = -0.82$, $P = 0.0001$); in particular, arousal ($r = -0.82$), orgasm ($r = -0.72$), lubrication ($r = -0.61$), and satisfaction ($r = -0.63$, all $P < 0.001$) showed an inverse correlation with BMI, whereas desire and pain did not. Conclusion: Increased BMI early in menopause represents a risk both for urinary incontinence and for

sexual dysfunction. Weight control has an essential role in post menopause and should be considered early in perimenopause to safeguard female quality of life as well as to prevent or improve UI and female sexual dysfunction symptoms.

The two most prevalent diseases associated with postmenopausal women are heart disease and osteoporosis. Both of these diseases are strongly linked to estrogen level as well as dietary and lifestyle habits.

Estrogen appears to naturally protect women from heart disease, presumably by promoting a favourable plasma lipid profile and healthy circulation. A comparison of plasma lipid levels between non-obese, pre- and postmenopausal women showed significant increases for postmenopausal women in total cholesterol, low-density lipoprotein (LDL) cholesterol, and triglycerides, and decreases in high-density lipoprotein (HDL) cholesterol²⁰. These effects were observed after standardization for age, body mass index, and other confounding variables, and were thus accredited to menopause. The changes in plasma lipids that occur with menopause are, likely, the result of many factors; however, estrogen may play both a direct and indirect role. Estrogen itself appears to lower LDL levels by up-regulation of apo B100 E receptors. Furthermore, the reduced estrogen levels in postmenopausal women cause a relatively higher concentration of circulating testosterone. Elevated testosterone levels are known to increase LDL levels and lower HDL levels by increasing hepatic lipase activity⁷⁶.

Cardiovascular (CVD) disease includes both coronary heart disease and stroke. CVD is rare in women before menopause, but is the most common cause of death over 60 years of age. Coronary heart disease is a single most common killer in women caused by

atherosclerotic changes to coronary arteries, resulting in ischaemic damage to the myocardium.

Lorraine Dennerstein et al⁶⁸. investigated the changes with menopausal and hormonal status, taking advantage of the longitudinal data. This study was conducted to provide an overall analysis of the influence of hormonal changes during the menopausal transition on a range of health outcomes while simultaneously considering all the available predictors and all the endpoints and to test the hypothesis that prior health status predicts current health status. This was a 9-year prospective observational study of 438 Australian-born women, who at baseline were aged 45 to 55 years and had menstruated in the prior 3 months. Interviews were conducted and fasting blood and physical measurements were performed annually. Main outcome measures were hormone levels, sociodemographic variables, attitudes and lifestyle variables, self-rated health and well-being, bothersome symptoms, coronary heart disease risk, bone mineral density, and sexuality. Data from 336 women, 77% of the original sample, were analyzed. Statistical modelling using structural equations showed that for all health endpoints, the prior level of that variable was the most important predictor. Declining levels of estradiol during the menopausal transition affected certain health outcomes: bone mineral density, coronary heart disease risk, vasomotor symptoms, vaginal dryness, and sexual response. Well-being is negatively affected by symptoms, hassles, and stress. Exercise has beneficial effects on hot flushes, well-being, body mass index, and coronary heart disease risk. Relationship factors and mood affect sexual response. Conclusions: This observational study provides a conceptual data based framework for understanding changes in women's health during the natural menopausal transition.

Estrogen also plays an important role in bone health by decreasing the rate of bone resorption. As estrogen levels decline, the body's ability to keep up with the natural process of bone turnover also declines; as bone mass decreases, the risk of fractures increases. Osteoporosis is commonly understood to be a major risk factor for menopause women. Estrogen deficiency is purported to be the primary cause of osteoporosis although many other secondary causes exist. Research results demonstrate the efficacy of estrogen in increasing bone mass density (BMD) and in decreasing the number of fractures of the forearm, vertebrae and hip. Osteoporosis is defined as the reduction in bone mass and the micro-architectural deterioration, so that fractures are likely to occur with minimal trauma. In women there is an accelerated loss in the first few years after menopause, particularly in the trabecular bone. There are fractures more common in the areas of thigh, trabecular bone content such as wrist, vertebrae and hip. Often osteoporosis is not diagnosed until a fracture is sustained and there is already substantial loss of bone mass which cannot then, be effectively replaced¹⁹.

As stated by Mark S⁷⁷ Osteoporosis greatly affects the health of ageing women and is recognized as a major area of focus in women's health. In comparison to men, women are at higher risk from osteoporosis and have a lifetime risk of an osteoporotic fracture as high as one in three. These fractures, commonly of the hip and spine, often result in secondary complications, such as functional impairment, increased hospital stays that may result in further health problems, increased medical costs, and increased dependence on others for living assistance. The loss of bone strength and the potential for the onset of osteoporosis do not reflect normal ageing.

Osteoporosis as an increasingly large global health problem, while not ignoring the protracting pain and disability often experienced by individual sufferers. The situation in India, which is currently the world's second most populous nation, is illustrative. Increased longevity alone is predicted to increase dramatically the number of hip fractures worldwide to 63 million per year by the 2050. More than half of the total number of fractures will occur in Asia and Latin America⁷⁷.

Finkelstein, JS. et al⁷⁸ studied bone mineral density changes during the menopause transition in a multiethnic cohort of women. Approximately 40% of all postmenopausal women will eventually experience bone fracture. As part of SWAN almost 2000 pre, peri and post menopausal women received bone mineral density measurement annually for an average of three to four years. The annual rate of bone loss during these intervals ranged between 1 to 2.5 percent. If bone loss were to continue at this rate for 5 additional years, the average woman's BMD would decline by 5 to 10 percent. BMD losses occurred at greater rates in women in the lowest percentile of body weight and during the late peri and post menopausal stages. Identifying the factors associated with bone mineral loss during menopause transition could help women and health care providers make informed decisions about need to screen for osteoporosis and when to consider therapy to prevent bone loss.

The long term effects of menopause caused by estrogen deficiency may not have any immediate impact on the women's quality of life at the menopause. The metabolic changes owing to the menopause occur silently and have an impact on the health of older women¹⁸

2.4 Quality of life and Health related quality of life (HRQoL) associated with menopause

Sedigheh F et al ¹⁶ stated that women are one of the most important parts of the family and society, and community health is dependent on provision of the needs of this group. Menopause is one of the most critical stages of life among women. One of the aims of health services for all people in 21st Century is improvement in Quality of life. In menopausal women the term quality of life incorporates physical symptoms such as hot flashes, night sweats and vaginal mucosal dryness etc.

The overall health and well being of mid-aged women has become a major public health concern around the world. More than 80% of women experience physical or psychological symptoms in the years approaching menopause with various distress and disturbances in their lives, leading to decrease in quality of life. Quality of life is a complex, abstract and multidimensional concept which is difficult to define and has relevance to virtually all the areas of human function²³.

Most women care not only about living long lives but also about living healthy lives free of disability, disease, and unpleasant symptoms that prevent the enjoyment of and involvement in meaningful relationships, work, and recreation. The characteristics of a healthy life are the essence of what is meant by health-related quality of life (HRQOL)²³.

The theoretical basis of HRQOL is a multidimensional perspective of health stemming from the often-cited World Health Organization (WHO)⁷⁹ definition of health

as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.”

HRQOL is defined as the value assigned to duration of life as modified by impairments, functional states, perceptions, and social opportunities that are influenced by disease, injury, treatment, or policy. The specific domains of HR QOL include resilience or the capacity to respond to stress, health perceptions, physical functioning, and symptoms. HRQOL is a main part of QOL and is considered to be an important construct in describing one’s overall condition within the health context ⁷⁹.

Assessments of overall QOL for menopausal women must include consideration of somatic symptoms (hot flushes, night sweats, urogenital atrophy), psychological symptoms (depression, mood swings, irritability, anxiety), and life circumstances (function in the workplace). Thus, overall QOL may include four major factors: occupational, health-related, sexual, and emotional. Consideration of HRQOL is also influenced by women's increased risk of multiple chronic diseases associated with menopause, including osteopenia, osteoporosis and related fractures, and cardiovascular diseases⁵⁸.

T. Satoh and K. Ohashi²⁸ conducted a study to determine the quality of life (QOL) of middle-aged Japanese healthy women during the menopausal transition, to identify the correlation between decreasing quality of life and severity of menopausal symptoms in those women, and to evaluate the number of women who sought treatment/health-care support and their expectations for health-care services. This was a community-based study, performed in collaboration with the Munakata Women’s Midlife Health Project.

The participants attended an annual medical check-up and cancer screenings, and led an everyday life without receiving medical treatment. Their quality of life was assessed with the World Health Organization QOL assessment (WHOQOL) and the severity of menopausal symptoms was assessed with the Kupperman index. Their expectations for health-care services were determined with an open-ended questionnaire. The mean scores of the Kupperman index in the peri- and postmenopausal states were significantly higher than that in the premenopausal states, whereas there was no significant difference of quality of life scored by the WHOQOL in the three groups. In spite of recruiting healthy middle-aged women, 24.4% of the perimenopausal and 26.6% of the postmenopausal women suffered from moderate or severe menopausal symptoms. The decreasing level of quality of life was correlated with the severity of the menopausal symptoms in the peri- and postmenopausal women. The participants did not receive medical support except in two cases, but 83.0% of them wished to participate in a seminar concerning menopause. Several of them sought treatment, health-care support and advice on how to maintain their health during and after the menopausal transition. Nearly one-quarter of Japanese community-dwelling, healthy women in the peri- and postmenopausal states suffered from menopausal symptoms, which decreased their quality of life in everyday life.

Suling Li⁸⁰ conducted similar study to describe the frequency and distress of symptoms associated with perimenopause, to examine the changes in the quality of life (QOL) related to perimenopause, and to examine the relationships between symptoms associated with perimenopause and the QOL. A cross-sectional, correlational design was employed. Two hundred fourteen perimenopausal women completed the Women's Health Assessment Scale (WHAS) and the Quality of Life Scale. It was found that vasomotor symptoms were not central to the list of symptoms associated with perimenopause. More

women reported psychosomatic complaints as opposed to vasomotor complaints. Compared to the premenopausal period, women during perimenopause experienced slightly, yet significantly decreased, levels of QOL. Multiple regression analysis demonstrated that the psychosomatic symptom category was the sole predictor of the QOL during perimenopause. In summary, psychosomatic symptoms occur most frequently and are most distressful for perimenopausal women in this study. It may be important to manage psychosomatic symptoms to improve the QOL for perimenopausal women.

To investigate the relationship between perceived change in QoL and menopausal transition status, socio-economic circumstances, lifestyle factors, and life stress. The researchers Mishra G, Kuh D²⁴ collected prospective data from a cohort of 1525 British women followed up since their birth in 1946 and annually from 47 to 54 years. Following factor analysis, the 10 survey items for perceived change were combined into three QoL domains: physical health (physical health, energy level, and body weight), psychosomatic status (nervous and emotional state, self-confidence, work life, ability to make decisions, and ability to concentrate), and personal life (family life and time for self, hobbies, and interests). In the fully adjusted model, the most important risk factor for decline in all three domains was work or family related stress ($p < 0.001$). Menopausal transition status was significantly associated with change in physical health ($p < 0.001$) and psychosomatic ($p < 0.001$) domains, but not personal life. Women who were perimenopausal for at least a year perceived decline in physical ($p = 0.009$) and psychosomatic ($p = 0.05$) domains compared with premenopausal women, while those on hormone replacement therapy (HRT) for at least a year reported relative improvement (physical $p = 0.02$, psychosomatic $p = 0.06$). Apart from work and family-related stress, physical inactivity was associated with a relative decline ($p = 0.03$) in the physical health

domain, and nulliparity with a relative decline in the personal life domain ($p=0.006$). Both psychosomatic and personal life domains declined significantly with age ($p<0.0001$ and $p=0.003$, respectively). Women with four or more children reported a relative improvement in the psychosomatic ($p=0.05$) domain.

Avis NE⁸¹ investigated the influence of menopause, health status and psychosocial and demographic factors. The study examined whether menopausal status is associated with global quality of life (QOL) among women aged 40 -55 and whether this association varies by race/ethnicity. The researcher further examined the contributions of other health-related and psychosocial factors to QOL and whether these associations vary by racial/ethnic group. Analyses are based on 13,874 women who participated in the multi-ethnic, multi-race study of mid-aged women called the Study of Women's Health Across the Nation (SWAN). Study participants completed a 15 -min telephone or in-person interview that contained questions on a variety of health -related topics. Items of interest for these analyses include global QOL, menstrual history (to assess menopausal status), sociodemographic, health status, lifestyle, and psychosocial variables. Results showed that in unadjusted analyses, early perimenopausal women reported lower QOL compared with premenopausal women, but menopausal status was no longer associated with QOL when analyses were adjusted for other variables. In multivariable models, being married and having low levels of perceived stress were associated with better QOL across all racial/ethnic groups. While there were many consistencies across racial/ethnic groups, they also found that the nature of the associations between QOL and education, marital status, perceived stress and social support varied across racial/ethnic groups. Relatively little is known about the association between menopause and health -related quality of life (HRQL) across ethnic groups.

Twiss JJ⁸², undertook a pilot study designed to determine the difference in frequency and distress related to perimenopausal symptoms in users and nonusers of hormone therapy (HT), to identify the difference in quality of life (QoL) indicators, and to determine if there is a relationship between QoL and frequency and distress of symptoms for users and nonusers of HT between the ages of 40 and 55 years. Self-reported responses to the Perimenopause Assessment Questionnaire with five QoL indicators imbedded, the Women's Health Assessment Scale, height, weight, and body mass index from 77 users and 89 nonusers of HT. More users reported using HT to control perimenopausal symptoms than for birth control or gynecological problems. Nonusers reported a higher percentage of a variety of symptoms compared to users, with more psychosomatic symptoms being reported. Both groups identified lack of energy as the most frequent and distressful symptom. There was a significant difference in frequency of symptoms between groups and a significant difference in distress of symptoms. There were significant negative correlations with the five QoL indicators and frequency and distress of symptoms for users and nonusers of HT, with exception of stress and frequency of symptoms for users. More psychosomatic symptoms were correlated with QoL for nonusers. Cold sweats, loss of interest, miserable and sad, and life not worth living were highly significant for nonusers with QoL, while feeling unattractive, decreased well-being, and lack of enjoyment for users was highly significant.

Chedraui P et al.⁸³ conducted a research study to assess the female quality of life (QoL) during the menopausal transition and determine factors (personal and partner) related to its impairment. The frequency of menopausal symptoms was also assessed. In this cross-sectional study, healthy women aged 40-59 years were asked to fill out the

Menopause Rating Scale (MRS) and a questionnaire assessing personal and partner demographic data. During the study period, a total of 409 women were surveyed. Mean age was 47 +/- 5.3 years (median 46). Mean educational level was 13.2 +/- 4.1 years (median 14), with 28.1% having 12 or less years of schooling; premenopausal (42.1%), perimenopausal (24.4%) and postmenopausal (33.5%). At the time of the survey, 9.8% were receiving hormonal therapy (HT) for the menopause, 1.5% were on psychotropic drugs and 1.2% on alternative treatments for the menopause. Regarding partner profile, 10.3% had erectile dysfunction, 11.2% had precocious ejaculation and 7.3% had abused alcohol. Mean total MRS score was 9.1 +/- 6.4 (median 9); for the somatic subscale, 4 +/- 2.7; the psychological subscale, 3 +/- 2.8 and the urogenital subscale, 2.1 +/- 2.5. Of the surveyed women, 50.6% presented a total MRS scoring of 9 or more (moderate to severe intensity). The four most frequently found symptoms of those composing the MRS were hot flushes (68.9%), sleeping problems (68.4%), depressive mood (55.2%) and irritability (51.6%). After adjusting for confounding factors, logistic regression analysis determined that female age, menopause and partner precocious ejaculation increased the risk for presenting higher total MRS scores (impaired female QoL) whereas HT use, church assistance and partner faithfulness decreased this risk. A high rate of middle-aged women in this series presented impaired QoL associated with female age and hormonal status and additionally to partner's health and sexual behavior

Avis NE et al.⁸⁴ examined the association between HRQoL and early perimenopause and ethnicity, adjusting for health, lifestyle, psychosocial, and sociodemographic factors. Questionnaires were administered to pre- and early perimenopausal women. They studied a cohort of 3302 black, Chinese, Hispanic, Japanese, and white women aged 42 to 52 years from the multisite Study of Women's

Health Across the Nation (SWAN). The measurement of HRQoL, menstrual regularity, and a variety of co-variates was done. HRQoL was assessed with 5 subscales from the Short Form-36; impaired functioning was defined as being in the 25% most impaired on the subscale. There were significant ethnic group differences across all 5 subscales in unadjusted analyses. Ethnicity was no longer significant for the Vitality or Role - Emotional subscales when adjusted for health variables or for the Role -Physical subscale when analyses were adjusted for socioeconomic status, health, lifestyle, or social circumstances. Ethnicity remained significant for the Bodily Pain and Social Functioning subscales, even in adjusted analyses. It was concluded that early perimenopause is not associated with impaired functioning when adjusted for symptoms. Significant ethnic differences in HRQL exist. Some, but not all, differences can be explained by differences in health, lifestyle, and social circumstances.

Placido L et al.⁸⁵ study investigated whether body mass index, abdominal obesity or fat distribution in postmenopausal women influence their quality of Life. A cross-sectional study was carried out on 250 postmenopausal women (age: 50 –64 years), with intact uterus and ovaries, sexually active, and non-hormone therapy users. Various anthropometric measurements were considered and a specific health-related quality of life (HR-QoL) instrument, the Cervantes scale, was performed. Thirty-three women were not included as they refused to participate in the study, had chronic diseases such as hypertension, diabetes type 2, depression or did not answer all the scale items, so 217 patients were evaluated. According with BMI values, 34% of women were obese, 46.1% were overweight, 19.8% were normal weight and there were no underweight women. Consistent relation was found between BMI and global values of HR-QoL, but obese women were diagnosed with “high level of problems” in the “psychical domain” and in

the “sexuality domain”. This difference in “sexuality domain” was also appreciated in women with abdominal obesity. Fat or lean mass was not correlated with HR-QoL. The obesity did not affect the global HR-QoL in Spanish postmenopausal women, but could have an influence on the psychological and sexual domains. Other anthropometric measurements are not associated with changes in HR-QoL.

The majority of menopause studies have operationalized HRQOL as frequency and severity of symptoms. Taken together, studies suggest that the perimenopause is associated with higher levels of somatic symptoms. It is unclear whether the perimenopause is related to other domains of HRQOL. Studies typically compare premenopausal women with women of other menopausal transition status separately, thereby not addressing the question of further change in HRQOL after the cessation of menses.

Understanding the impact of the menopausal transition on HRQOL is key to good medicine as, understanding that menopause is a universal phenomenon. Many studies on menopause from western countries have reported a significant impact of menopause on quality of life, whereas only a few Indian studies related to occurrence of symptoms during perimenopause and menopause. Despite extensive searches no studies were found in relation to menopause and quality of life in Indian women. Hence there is a clear need for investigating the effects of the menopause on HRQOL.

2.5 Measures to relieve symptoms of menopause

Menopause can have a significant effect on a women's quality of life. Their health needs change significantly and it is important that women become aware of the new health risks they face and that there are options for preventing those risks.

Estrogen therapy has long been established as an effective treatment for relief of vasomotor symptoms associated with menopause and remains the chief therapy available for that indication.

The results of women's health initiative in 2002⁸⁶ as well as more recent clinical trials, have raised questions about the safety and efficacy of hormone therapy (HT), prompting women to reconsider their use of hormone replacement to alleviate unwanted symptoms. Studies on menopause from western countries have reported a higher prevalence of physical and psychological symptoms around menopause. Therefore in most developed countries hormone replacement therapy (HRT) is often recommended to prevent these distressing symptoms. There are no sufficient studies on issues relating to the effect of menopause on women and feasibility and impact of HRT in the health care system in India. Studies in India and abroad have indicated a significant impact of menopause on the physical health of perimenopausal women

Alternative remedies used to relieve menopausal symptoms and support general health include the use of proper diet exercise, vitamin mineral and herbs. There is growing interest in the class of naturally occurring plant hormones called phytoestrogen that are similar to human estrogen. Soybeans, soy sprouts, peas and yams are rich sources. High dietary intake of these phytoestrogens such as soya is observed in Japanese

and has been linked not only with fewer menopause symptoms but also to a lower incidence of breast cancer⁶.

Most importantly, there is a need for perimenopausal educational programs to be developed and implemented. Although prescription and non-prescription drugs offer many women effective options for treating menopause-related symptoms, making certain so-called "lifestyle" changes should not be ignored or downplayed. Lifestyle changes can have an enormous impact on health. Adequate exercise is the crucial ingredient missing in most women's lives. Diet and health are intimately linked --and women who are approaching menopause have special dietary concerns. Diet is another "lifestyle" factor that can be considered "menopause treatment." 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, women need to pay particular attention in keeping fat off the waistline and tummy, the most dangerous fat locations for heart health. There are also many "natural" treatments for both menopause and menopausal symptoms⁸⁷.

Miller RG, Ashar BH⁸⁸ in their study evaluated the available hormonal, nonhormonal pharmacologic, and dietary supplement preparations used for the treatment of menopausal vasomotor symptoms. More than 75% of women experience hot flashes during perimenopause and more than 25% remain symptomatic for longer than 5 years. Vasomotor symptoms constitute the primary reason women seek medical care during this time. Of these, vasomotor symptoms are often the most debilitating for women and create a challenge for physicians. Coping mechanisms are a reasonable treatment choice for women with mild symptoms but are frequently inadequate to restore functionality to women with moderate to severe symptoms. Hormone therapy is the most effective

management option for hot flashes. Other proven, albeit less efficacious, pharmacologic options do exist. These include serotonin re-uptake inhibitors, gabapentin, and alpha2-adrenergic agents. Finally, "natural" alternatives have surged in popularity, as many women have turned to over-the-counter vitamins and herbal products. Scant short-term data exist for few of these popular dietary supplements.

2.6 Knowledge of women regarding menopause and need for education during perimenopause

During perimenopausal years, the most important role for health care providers is to offer women the education they need. Physiology, anatomy, social support, culture, expectations and women's attitudes and self care knowledge, may be important factors affecting how women cope with transitional perimenopausal symptoms.

C. Berterö¹⁴ investigated the expectations, apprehensions and knowledge about the menopausal period and climacteric symptoms. The data was gathered by using a semi structured interviews/discussions with a convenience sample of 39 women, all 47 years of age. Data interpretation and analysis were based on content analysis, but influenced by a qualitative approach. The findings included women's expectations and feelings of freedom. Apprehensions were described as different climacteric symptoms, which were well known to the women through their own or other's experiences. The women were, to some extent, aware of the physical and psychological changes that follow the menopause. However, the women lacked knowledge about these changes or self-care activities that could prevent problems or mitigate symptoms. Discussions on health with premenopausal women can increase their knowledge about a natural phase of life, the climacteric period. The study showed that nurses/midwives who have regular contact with some women

during their life have an important role to play in providing information, as well as in the treatment of climacteric symptoms.

Bhatia V et al⁸⁹: A cross-sectional study was conducted in women residing in urban and slum areas of Chandigarh, India, to ascertain the knowledge of women about menopause. A systematic random sampling method was used. The study population comprised of women above 40 years and residents of study area. Out of total 528 women interviewed, 302 (56.1) were residing in urban area and rest were residents of slums. 78.8%, urban and 60.2% from slums had attained menopause. Majority (70.3%) of urban residents have heard about menopause as compared to 30.9% in slums. The most common menopausal symptom was vaginal irritation / discharge (42.7%). Less than half of females (38.7%) ever took treatment for menopausal symptoms. Only 2(28.6) women got their pap smear done after it was being suggested by doctor and they were from urban area only. This study highlights the lack of awareness regarding menopause in both urban as well as slum population in India.

A cross-sectional descriptive survey⁸⁷ was conducted to explore the level of perimenopausal knowledge of mid-life women in northern Taiwan, to describe the relationship between demographic factors and women's knowledge, and to identify what information health providers need to offer them. Method. The Perimenopausal Knowledge Questionnaire was used to collect data. The study was carried out in August 2000 to September 2001. A convenience sample was recruited from traditional Chinese medicine clinics, gynaecology clinics and communities in northern Taipei. Results indicated that the overall mean correct answer weighted Perimenopausal Knowledge score of these mid-life women was 46.31. The rank of weighted scores from highest to

lowest was: (1) self-care during perimenopause, (2) the perception of perimenopause, (3) knowledge related to hormone replacement therapy and (4) body changes associated with the declined oestrogen in perimenopause. Only educational level was significantly associated with Perimenopause Knowledge level ($P < 0.01$). Of the women participants in the study, less than 20% (n ¼ 353) answered the items that measured self-management of symptoms related to perimenopause correctly. Less than 1.4% of the women knew that taking hormone replacement therapy required a physician's prescription and subsequent regular health check-ups.

Thomas SE⁹⁰ conducted a survey in the New York metropolitan area to determine the knowledge and attitudes of women towards menopause and to identify implication of health education practices. Seventy four 36 to 60 year old English speaking Caribbean women participated in the study. A 33 item questionnaire was distributed by the researcher and her trained research assistant at three sites. The questionnaire was in the form of a checklist, determined by pre-test, to take no more than 30 minutes to complete. The respondents lacked comprehensive understanding of the meaning of menopause and information about the risk of heart diseases associated with menopause. In general menopause health information was limited. The majority said they did not seek medical attention when symptoms were present. Among those who did seek care and those for whom treatment was prescribed, noncompliance was high, even with the support of significant other. There was little correlation between the reported level of education and knowledge of health risks associated with menopause.

Nisar Nusrat, et al³³ in their report also computed similar results. The study was carried out to determine the knowledge and attitude of women towards menopause and to

investigate the symptoms experienced by postmenopausal women. It was a cross sectional survey based on sample of convenience. The study was conducted at the outpatient department of Isra university hospital from 1st January 2005 to 31st December 2006. Total 863 women of age 42 to 80 years were interviewed in the office of outpatient department. A semi structured questionnaire was used to collect data. Data analysis was done by computer software statistical program for social sciences (SPSS) version 11.0. Mean age of respondents was 55.05, Menopause was natural in 727 (84.24%) women and 136 (15.75%) had surgical menopause. 680 (78.79%) women had little knowledge about menopause, while 137 (15.8%) women knew about effects and symptom of menopause. 680 (78.79%) women considered menopause as a natural process, while 183 (21.2 %) perceived it as a disease, 720 (83.42%) women were happy about cessation of menses and they did not want to have menses again, while 143 (16.57%) women wanted to have menses again. These women were of age 45 to 58 years and 85 (59.4%) were uneducated. Frequently reported symptoms were backache in 653 (75.66%), body aches, 576 (66.74%) and Insomnia in 544 (63.44%) women. Vasomotor symptoms (Hot Flushes and Night Sweats) were reported by 513 (59.4%) and 390 (45.19%) respectively. Short loss of memory was reported by 536 (62.10%) women. 318 (36.84%) women were bothered by menopausal symptoms but only 275 (31.86%) has consulted doctor. 649 (75.20%) women were not taking any medicine for symptoms, 08 (0.926%) were taking Herbs, 10 (1.15%) were on HRT and 196 (22.71%) women were taking analgesics and Ca supplements off and on. Hypertension and Diabetes Mellitus was present in 180 (20.85%), 215 (24.9%) women respectively. Majority of women were unaware of menopausal symptoms and its health effects. Most of them considered it as a natural process of aging, though bothered by symptoms but did not go for consultation due to lack of awareness and poverty.

Wong LP1, Nur Liyana A H³⁷ aimed to examine the knowledge and perception of menopause among young to middle aged women (15 to 49 years old). A cross-sectional survey using 20-items questionnaire was conducted in three randomly chosen districts in Federal Territory, Kuala Lumpur. Women in this survey were aware of the meaning of the term menopause and its symptoms. However, the majority lacked comprehensive understanding about the health risks associated with menopause. Commonly cited sources of knowledge were magazines and family members. Lack of official sources for accurate information on menopause was reported. Communication with health care personnel regarding menopause was uncommon. An exploration into respondents' perceptions on menopause revealed that the majority displayed positive thinking towards menopause. Young respondents seemed to have better perception regarding menopause compared to middle aged women. Although the women had good knowledge about menopause, they expressed feelings of sadness and nervousness upon the approach of their own menopause. This study identifies the need for further research to examine the views and also to explore urban and rural differences in the aspect of knowledge as well as perception and attitude of women regarding menopause.

Motivation for health promotion may be further strengthened if women perceive life-style modifications as an alternative, non-pharmacological way of managing menopausal symptoms. In the future, menopause may act as a window of opportunity for health promotion and life-modifications. Veerus et al⁹¹ Some studies suggested that women need health education or information to be able to make informed decision about their own health and reduce uncertainty associated with menopause or existing health behaviors.

An evaluation³⁴ of the long term impact of a health education intervention in primary care, for premenopausal women (45 years of age) included information and group discussion about menopause, stress management, health behaviours (smoking, exercise, diet) and treatment choices. Questionnaires were sent to 86 women who had been randomized into two groups (prepared/control) and were now aged 50 (response rate 91%). The prepared group had significantly greater knowledge of menopause and attributed fewer symptoms of menopause than the controls. There were no group differences in measures of general health or mood, but there was a tendency for the prepared group to report more interest in sexual activity. Subjective evaluation of the intervention was positive in terms of increasing knowledge and helping women to deal with the emotional and practical aspects of the menopause. The short term outcome of this study revealed that the knowledge improved significantly at the follow-up assessments for the preparation group but not for the control group. On the whole, the prepared women's beliefs about menopause became less negative following the intervention, although there were also some changes reported by the control group. The proportion of smokers decreased from 25 to 20% for the prepared women although this did not reach statistical significance. There was no change in the prevalence of regular exercise. There was also a decrease in the intention to take hormonal treatments following the intervention. Moreover, the study showed that health education for middle aged women had a long term impact and helped women deal emotionally and practically with menopause symptoms.

Patient education can provide the information women want and can decrease their uncertainty about menopause. A variety of methods have been used, including written materials for self-education, lectures, and small group discussions for health promotion.

Several studies are conducted to evaluate the effectiveness of these methods. McDevitt J.²⁷ investigated the effectiveness of a multimedia educational program specifically designed for perimenopausal women. The women (N = 174), ranged in age from 28 to 79 years attending the program at 6 locations in the East and Midwest between Fall, 1998, and Spring, 2000 were surveyed 2 weeks and 3 months after attending the program. The program included current health information, women's values and wisdom about menopause, and peer-interactive discussions in a multimedia format. The goal of the program was to assist each participant to take an informed, proactive role in choosing menopause management options and to develop a personalized midlife wellness plan. They were premenopausal (31.7%), perimenopausal (38.4%), or postmenopausal (29.9%), and most were having menopausal symptoms sometimes (57.7%) or often (31.3%). Women changed their wellness practices after attending the program ($t = 2.509$, $df 171$, $p = .013$). For health care utilization, 56% of the women had talked with their health care provider about menopause by 3 months, the largest effect size obtained for all items. They did not change their health care provider for menopause ($t = .317$, $df 150$, *NS*). Women who were having more symptoms of menopause were more likely to make changes in wellness practices ($F = 3.87$, $df 2$, $p = .05$). Women who were perimenopausal were more likely to talk with their health care providers ($F = 3.91$, $df 2$, $p = .05$), especially if they were having symptoms of menopause ($F = 5.98$, $df 2$, $p = .003$).

2.7 Impact of health education in improving quality of life during menopause

Ohki, K. et al⁹² evaluated the effectiveness of a series of 16 lecture and exercise programs, conducted over a six-month period in which 72 women participated who were living in Tokyo. Each two-hour session included basic information on diet, exercise and

relaxation, and prevention of lifestyle-related diseases as well as an active exercise program. After completing the program, the women's total cholesterol levels, blood pressure, body weight, and body mass index had all improved significantly. In addition, they were eating better, engaging in more physical exercise, and had reduced stress levels. The authors conclude that good dietary habits, physical activities, and psychological support are all essential to the quality of life of climacteric women.

Sedigheh Forouhari et al¹⁶ set out this study in order to evaluate the effect of education on quality of life and the improvement of the health standards in menopause women. Sixty two women aged 44 – 55 referring to an academic outpatient clinic in Shiraz were selected by simple random sampling and allocated in two groups. Data was collected using modified Hildich questionnaire on quality of life during menopause stage. Quality of life in the subjects (vasomotor, psychosocial, physical and sexual aspects) was evaluated prior to education and 3 months after educational intervention. The mean quality of life score in study and control group prior to education was 81.7 and 74.8 and changing to 75.3 and 75.8, respectively after 3 months after intervention. The study group showed a significant improvement in their quality of life ($P=0.001$). A significant difference was seen between the groups in terms of changing quality of life after intervention ($P= 0.001$).It shows that education appropriate to menopausal women improves their quality of life and promotes health.

Rotem M⁹³, undertook a study to examine the impact of participation in a psycho-educational program on women's attitudes toward menopause, the perceived severity of their symptoms, and the association between the two. A Quasi-experimental design was used and data were gathered at baseline and 3 months after termination of the program in two health maintenance organization clinics. Eighty-two healthy 40- to 60-year-old

women participated in the study. Thirty-six women participated in the program, and 46 women comprised the control group. The Program participants met for 10 weekly sessions to receive information from a professional team on subjects related to menopause and to share and discuss their experiences. Main Outcome Measures were attitudes toward menopause and severity of menopause symptoms. Results: The more negative the attitudes, the higher was the severity of symptoms. Participants reported significant improvements in attitudes and reductions in symptom severity compared to their own baseline scores. Participation in a program that combines delivery of information and processing of experiences on the cognitive, emotional, and social levels may improve women's attitudes toward menopause and ease the perceived severity of their symptoms, thereby increasing quality of life.

Conclusion

The literature review has given an overview that menopause is one of the most critical stages of life, among women. One of the aims of health services in 21st century is improvement in quality of life. In menopausal women the term quality of life incorporates its physical symptoms such as hot flashes, night sweats, sleep disturbance, vaginal dryness and urinary incontinence and long standing diseases ahead .

A recent research in India suggests that almost one in every five women in the country have gone through menopause by the age of 41years. Considering this, now Indian women normally live between 10 and 20 per cent of their lives in the post - menopausal state. Extensive search revealed that experimental studies in Indian menopausal women are scarce. Moreover, only a few studies are found in relation to quality of life and effectiveness of education program in perimenopausal women.

The researcher has planned to carry out a study on women during perimenopause to address the symptoms, related diseases and prophylactic measures so that women can lead an enjoyable and healthy life. To focus the felt need a quasi experimental study to find the effect of planned teaching programme on knowledge and self expressed practices of women in relation to management of selected physical components of menopause is attempted.