1.1 Background of the study

Adolescence is a very important and sensitive period of one’s life. According to the World Health Organization’s Expert Committee (WHO, 2003), adolescence is defined as the period between 10 and 19 years, the second decade of life and account for more than one-fifth of the world’s population. India’s population of young people is approximately 327 million, which comprises 30% of the population of the country. The number of adolescents is projected to continue growing over the coming years (National Commission on Population, 2007). A general lack of understanding about the particular needs of Indian adolescents, specifically adolescent girls, persists in India and the wider global community. Adolescent girls constitute a vulnerable group, particularly in India where female child is a neglected one, as well as inaccessibility to basic health care, education, sexual and reproductive health needs, rights, age old traditions and misconceptions about menstruation that commonly prevail in this cohort. Menstruation is still regarded as something unclean or dirty in Indian society. The reaction to menstruation depends upon awareness and knowledge about the subject.

Mahajan and Sharma (2004) conducted a study to assess the knowledge level of adolescent towards reproductive system and reproductive organs among 400 adolescent girls, 200 from rural areas and 200 from urban areas of Jammu. Urban adolescent girls had comparatively better knowledge regarding reproductive issues, than rural adolescent girls. Similarly, Bhan et al. (2004) in his study on awareness regarding reproductive knowledge among adolescent girls (16-20 years) found that awareness was very low. Additionally Gupta, Sadhna, Sinha and Achala (2006) stated
that the majority of girls had only partial or incomplete knowledge of facts on menstruation and about physiological changes.

As adolescent girls may have poor knowledge about reproductive health aspect it is essential to empower them. A path towards empowerment is through education, as appropriate education should aim at developing the skills and abilities of adolescents, which enable them to deal effectively with the demands and challenges of everyday life, in positive and beneficial ways. However, adolescents are not incorporated into the realm of health education in a large number of developing countries, where theory-based behavior change strategies are rarely imparted (Kamla-Raj, 2008; Sinha Achala, 2006; population and health Indoshare, 2006). Hence the researcher decided to empower adolescent girls about menstrual problems especially on menstrual hygiene, premenstrual syndrome and its management through theory-based yoga intervention, as they are a promising group to the country’s development.

Menstrual problems

Menstruation is typically a universal event during a woman’s reproductive life, and up to 90% perceive one or more symptoms during the days before menstruation, and nearly all components of normal functioning of women can be affected by the changes related to phase of the menstrual cycle in either a negative or a positive way (Campagne & Campagne, 2007). More common problem associated with menstruation are headache, backache, dysmenorrhea, irregularperiods, premenstrual syndrome (Parker,sheddon, & Arbon, 2010; Houston et al., 2006).

Rigonel et al. (2006) investigated problems related to menstruation amongst adolescent girls and found that dysmenorrhea (77.2%) was the commonest problem and 67.1% had one or the other symptoms of pre-menstrual syndrome. Similarly Patil, Wasnik and Wadke (2009) reported that majority of the adolescent girls had one or
the other problems related to their menstruation, dysmenorrhoea (64.2%) was the commonest problem faced by adolescent girls and more than half of the study subjects had one or the other symptoms of premenstrual syndrome. As premenstrual syndrome is a common menstrual problem among adolescent girls next to dysmenorrhea, the researcher decided to focus on premenstrual syndrome among adolescent girls.

**Premenstrual Syndrome (PMS)**

Premenstrual syndrome (PMS) refers to a group of physical and psychological symptoms occurring during the luteal phase (7 to 14 days prior to menstruation) of menstrual cycle and relieved by the onset of menses. The complaints include emotional instability, depression, anxiety, irritability and impulsivity, sense of bloating, breast tenderness, fatigue and changes in appetite.

Some of the extant definitions of PMS include those from University of California, ICD-10 and ACOG. The University of California at San Diego (1992) had developed a definition of PMS based on women’s prospective self-reports. This definition requires, the patients to have the cyclic manifestation of at least one of the six affective symptoms and one of the four somatic symptoms during the five days before menses, in each of the three prior menstrual cycles. The listed affective symptoms are depression, angry outbursts, irritability, anxiety, confusion, social withdrawal and the somatic symptoms include breast tenderness, abdominal bloating, headache, swelling of extremities. These symptoms are relieved within four days of the onset of menses, without recurrence until at least cycle day 13.

The diagnostic definition for PMS established by the American College of Obstetricians and Gynecologists (ACOG, 2000) states that symptoms must be present five days before a woman’s period for at least three menstrual cycles in a row and end within four days after her period starts. Symptoms may interfere with normal life
activities cause impairments in work performance, family and social activities and sexual relationships. The Diagnostic and Statistical Manual of Mental Disorders, (1994) fourth edition (DSM IV), includes similar criteria for the diagnosis of Premenstrual Dysphoric Disorder (PMDD), which identifies women with PMS who have more severe emotional symptoms.

International Statistical Classification of Diseases -10 (ICD-10) (WHO, 1992), listed PMS as a physical disorder under pain and other conditions associated with female genital organs and the menstrual cycle. There is no requirement for a minimum number of symptoms or functional impairment to make the ICD-10 diagnosis of PMS.

**PMS prevalence and impact**

Reports on prevalence rates of PMS stated that 5-20% have moderate to severe clinically relevant premenstrual complaints and up to 75% of all women of fertile age may experience symptoms of premenstrual syndrome (Locke, 2003; Yonkers, O'Brian, & Eriksson, 2008). It is estimated that up to 85% of women who menstruate experience at least one premenstrual symptom, occurring within the two weeks before menses and easing after menstruation begins (The American College of Obstetricians and Gynecologists Education Pamphlet, 2003).

Woman’s Diagnostic Cyber Disease Profile (2008) stated that about 80% of women report premenstrual emotional and physical changes and about 20-40% of these women experience difficulties with these symptoms so that there is some change in behavior that is noticeable to themselves and others. The National Women’s Health Information Center (2011) stated that 30 – 40 % of women suffer with some impairment of daily activity due to PMS, 75% of women have some symptoms of
PMS and 3 – 8% women have severe PMS. Pearlstein (2010) stated the prevalence of PMS to be 64.6% among Japanese adolescent girls.

The Royal College of Obstetricians and Gynecologists reported that (RCOG, 2008) an estimated 75% of women experience symptoms of PMS. Around 5% have severe symptoms such as depression, anxiety, irritability and breast tenderness to an extent that profoundly disrupts their everyday life. Steiner, MacDougall and Brown (2003) stated that PMS is the most common health problem reported by women in reproductive age and clinically significant PMS varies from 12.6% to 31% of menstruating women.

Nisar, Zehra Haider, Munir and Sohoo (2008) investigated frequency, intensity and impact of PMS in medical students and found that 59.5% had mild PMS, 29.2% had moderate and 11.2% had severe PMS. The order of frequency of symptoms were anger, irritability, anxiety, tiredness, difficult concentration, mood swings, physical symptoms like breast tenderness and general body discomfort with great impairment in social life / activities and work efficiency/productivity. Quality of life score on mental component summary and physical component summary were significantly lower in the PMS group. The study concluded PMS is a common problem among young girls which adversely affects their educational performance and emotional well-being. Strategies should be adopted for detection and management of PMS in young girls.

PMS is related to high suicidal and accidental rates, employment and school absentee rates, poor academic performance and acute psychiatric problems (Beca Garcia1998). Women's Nutritional Advisory Service (WNAS 2001) found that more than eight out of 10 PMS sufferers felt violent and aggressive for up to two weeks
before their periods. Most sufferers felt depressed and eight out of ten said that PMS had affected their relationship.

Rizk, Mosallam, Alyan and Nagalker (2010) found that PMS had a moderate but significant negative impact (p<0.001) on the quality of life of adolescent girls, particularly in school performance, social interactions, lifestyle and emotional well-being. Difficulty in performing school functions and increase in stigma were the two most adversely affected parameters.

Dennerstein, Lehert, Bäckström and Heinemann (2009) stated that both physical and mental premenstrual symptoms have significant impact on quality of life, and up to 35% of women of reproductive age in Europe and Latin America were moderately or severely affected in activities of daily life by cyclical premenstrual symptoms. PMS is one of the factors that make women more susceptible than men to depression, particularly during periods of rapid fluctuation of gonadal hormones, such as premenstrual, postnatal and the climacteric period (Beca Garcia et al., 1998).

**Causes of PMS**

The causes of PMS are not clear. Yonkers (2008) stated that the exact cause of PMS has not been identified. Changes in brain hormone levels may play a role, but this has not been proven. Women with PMS may also respond differently to these hormones. PMS may be related to social, cultural, biological, and psychological factors. PMS is thought to be caused by an underlying neurobiological vulnerability to normal fluctuations in the circulating sex hormones, estrogen and progesterone levels during the menstrual cycle (Daley, 2009; Mortola, 1992). The role of sex steroids in PMS is supported by observations that symptoms often improve with treatments, resulting in ovulation suppression. Another hypothesis on the etiology of PMS proposes that emotional and physical symptoms may result from hormonal
fluctuations during the menstrual cycle that alter brain neurotransmitter or neuropeptide function (Daley, 2009; Uriel Halbreich, 2003).

Generally more stressful life events, or stressful life context, were related to premenstrual symptoms (Gollenberg, 2010; Woods, Most, & Longenecker, 1995). Stress viewed as chronic phenomena has been found to contribute a significant amount of variance in perimenstrual symptoms and higher variance in general health scores (Gannon, Luchetta, Pardie, & Rhodes, 1989). Perceived stress has been implicated as influencing the premenstrual symptom experience.

Recent studies state that increased stress in women can lead to PMS. The major symptoms of PMS are anxiety, anger, mood swings and decrease in concentration (De Emily Norman, 2010). Ten studies have discovered a relation between PMS symptoms and stress, still none is able to say if stress makes symptoms severe or if severe PMS makes the woman to feel stressed out. To better understand this relationship, the National Institute of Child Health and Human Development funded a study that gathered information from more than 259 women for nearly two-and-a-half menstrual cycles to observe how stress can affect PMS. When compared with low stress women, high stress women were more likely to have short temper, anger and mood swings during menstrual cycles. From these results, researchers concluded that stress is only a cause not an effect of PMS.

Treatment for PMS

The first therapeutic options for PMS are typically self-help techniques like healthy nutrition, dietary supplements, increased exercise and stress reduction (Anna Rushton, 2010; Reproductive Psychiatry Resource and information centre, 2010; Jean Hailes foundation for women’s health, 2009; Scott Ransom & Julie Moldenhauer, 1998). These measures should be emphasized if the patient’s symptoms are not severe
and last less than one week. Detailed discussions with the patient are vital for these non pharmacologic options to succeed.

Association of Women’s Health, Obstetric and Neonatal Nurses (AWHONN, 2003) and ACOG guidelines recommend the beginning of the treatment by working with the patient to set goals. The ACOG guidelines state that according to consensus and expert opinion the steps in treating PMS should be the following. First step is supportive therapy including reassurance and education about physiologic changes. Second step is dietary changes- especially carbohydrate rich foods and beverages to improve mood symptoms, food craving, calcium supplements and aerobic exercise. AWHONN guidelines recommend effective multimodal therapies for PMS as the first course of treatment. Therapies include cognitive behavioral symptom management, dietary counseling, supplements and exercise promotion.

Jarvis, Lynch and Morin (2008) evaluated the current non pharmacologic and pharmacologic treatment options for symptoms of PMS/PMDD and data were obtained through searches of MEDLINE and OVID (1950-March week 3, 2008) and concluded that lifestyle modifications and exercise are first-line recommendations for all women with PMS/PMDD and may be all that is needed to treat mild-to-moderate symptoms. Herbal and vitamin supplementation and complementary and alternative medicine have been evaluated for use in PMS/PMDD and have produced unclear or conflicting results.

**PMS and yoga**

Several yoga poses are proven to ease menstrual pain. It can also help our mind and body adapt to stress, anxiety and depression making us feel relaxed, calm and enabling us to cope with psychological symptoms of PMS. Having a generally
relaxed mind and body can also help in alleviating the menstrual pain and affective somatic symptoms of PMS (Max Lifestyle International, 2008)

Yoga relaxation techniques affects the sympathetic and parasympathetic components of autonomic nervous system, thereby affecting the vital physiological functions that govern heart rate, blood pressure, respiration, temperature, muscle tension and sweating. This yoga relaxation technique exercise eliminates muscular tension, reduces stress, improves sleep, calms down anxiety and affective symptoms of PMS (Anice George, 2011; Jyoti Dwivedi, 2007).

Research has proved that PMS is a psycho physiological and a stress induced disorder and that stress is a cause of symptoms of PMS (Gollenberg, 2010; Peeke & Frishett, 2002; Benson & Frankel, 2002; Cromie, 2002). Presence of more than 300 modalities of treatment indicate that existing remedies have not provided satisfactory help to relieve PMS (Chakmakjian, 1983). Yoga relaxation being a successful means of stress relaxation is expected to relieve PMS as well.

Nurses’ role

Nurses can support adolescent girls emotionally by verbalizing that their worries about PMS are taken seriously. A person-centered approach would allow the nurse to deal with individuals’ symptoms. Adolescents are prone to moderate to severe symptoms of PMS which they may be reluctant to report, while the mental health symptoms of PMS can wrongly suggest depression. PMS related study gives nurses the opportunity to update their knowledge and help them to impart fresh look to their practice. They have a valuable part to play in the multidisciplinary care offered to women that can be developed in primary and secondary care.

Community health nurses are frequently in the first line of contact with adolescent girls by means of school health programme. Hence nurses are needed to
educate and provide resources for adolescent on campus regarding PMS, thus contributing to early identification and intervention for adolescent negatively impacted by their premenstrual distress, depression and anxiety. For this reason, the researcher decided to test cognitive behavioral nursing strategies to promote health among adolescents with PMS. The intervention program was aimed to identify the PMS and implementation of intervention to improve the knowledge regarding PMS, skill in performing yoga relaxation technique and to reduce premenstrual distress, anxiety, depression.

1.2 Need for the study

Premenstrual symptoms have been recognized since ancient period. Many women experience a constellation of bothersome and even disabling psychological, somatic and behavioral premenstrual symptoms during a significant portion of their reproductive years. The cardinal symptoms are irritability and abdominal bloating, but mood swings, anger, anxiety/tension, depression or feeling 'blue', loss of control, fatigue, difficult to concentrate, food cravings, weight gain, headache and breast pain are also typically seen (Shah, Jones, & Aperi, 2008).

Intervention strategies for PMS has been studied and evaluated extensively in the West and only a handful of research studies have been conducted in India. However, no published data are available on PMS in Tamil Nadu (A state in India). In order to promote the health and well being of women in their reproductive age especially among adolescents of Tamil Nadu, it is imperative to understand about the prevalence of PMS and its management strategies.

In India, the prevalence of PMS found in 10-19 years old girls has been reported to be greater than 50%. (Sharma, Malhotra, Taneja, & Saha, 2010; Patil, Wasnik, & Wadke, 2009). Amita singh et al. (2008) found in her study on
premenstrual symptoms cited it to be the second most (60.50%) prevalent menstrual
disorder and 67.08% reported social withdrawal due to PMS. Pragya Sharma, Chetna
Malhotra, Taneja and Renuka Saha (2008) studied problems related to menstruation
amongst adolescent girls in New Delhi, India and found that dysmenorrhea (67.2%)
was the commonest problem and 63.1% had one or the other symptoms of PMS. PMS
affect daily routine of 60% girls due to prolonged bed rest, missed social
activities/commitments, disturbed sleep and decreased appetite, 17.24% had to miss a
class and 25% had to abstain from duty. Similarly Christina John (2006) stated in her
study that the commonest problem was dysmenorrhea (88.8%), PMS was the second
priority problem in the study group (45.8%).

An observational study was conducted on a convenient sample of 384 young
girls. Data were collected over two cycles by filling a 29 items shortened
premenstrual assessment form based on Moos menstrual distress questionnaire. The
result showed that prevalence of PMS was 53% according to ICD-10 criteria, among
which 42% was mild, 18.2% was moderate and 31.7% was severe. A total of 64 girls
(18.2%) met the DSM-IV criteria for severe PMS (Samia Tabassum, Bilqis Afridi,
Zahid Aman, Wajeeha Tabassum, & Rizwana Durrani, 2005).

Most of the PMS studies in India used retrospective method to describe PMS
and only a very few studies have used criteria to diagnose PMS, hence it was thought
that this study would necessarily investigate PMS by using ICD-10 criteria among
adolescents in order to detect the prevalence of PMS.

In India, PMS is not recognized as a problem, till date it is so called as western
culture bound syndrome with the increase in PMS prevalence, there is a requirement
to find out/assess the extent of PMS, symptom occurrence and intensity during the
menstrual period in every cycle. The most accurate method of documenting PMS has
been found to be the use of a prospective daily dairy record of menstrual symptoms for at least two consecutive cycles (Halbbreich, 2004; Johnson, 2004; Reid, 2003; ACOG, 2000; American Psychiatric Association, 2000; woods, Lentz, Mitchell, shaver, & Heitkemper, 1998). The use of daily diaries has several advantages over retrospective records. It permits evaluation of severity of symptoms, the degree of fluctuation of symptoms and allows comparison of trends between more than one menstrual cycles. Additionally, prospective analysis decreases the bias introduced by dependence as long periods of recall (Dean & Borenstein, 2004). Although many reports strongly recommend a prospective record of at least two cycles to differentiate PMS pattern, this kind of record has not been frequently reported in Indian research on PMS. Such a prospective study may provide an accurate data of PMS appearance across cycles of adolescent girls. Hence the researcher decided to use the method of prospective daily symptom diary maintenance while investigating PMS in this study.

A small body of research focused on adolescents, aged 13-18, with premenstrual syndrome. Vichnin, Freeman, Lin, Hillman and Bui (2006) provided support that PMS is common in adolescence with 94% of participants meeting criteria for PMS. Most severe symptoms reported included mood swings, anxiety, and irritability. Further there were no studies that focused exclusively on PMS and cognitive behavioral nursing intervention needed for adolescent girls, for this reason researcher focused adolescent girls in this study.

The other reason for focusing on adolescent girls in this study was, as adolescence is a developmental period characterized by multiple changes in virtually every aspect of an individual's life (Lucy & Osbom, 2005; Bandura, 2005). The combination of biological changes and social transitions creates an increasingly complex environment that exposes adolescents to a widening array of stressors and
challenges. The transition to adolescence is not only indicated by the development of a reproductively mature body but also by a plethora of challenges in almost every domain of life. Research has shown that a confluence of events, many of them novel and challenging, accounts for a significant rise in rates of depressive symptoms among adolescents (Conger Xiaojia Ge Rand , 2001; Freeman, 2002; Habreic ,2006).

Adolescents are subjected to many stressors including school demands, negative thoughts and feelings about themselves, changes in their bodies, exploring his or her own identity, problems with peer group, unsafe living environment, separation/divorce of parents, chronic illness within the family unit, moving or changing schools and being involved in too many activities ( Cobb, 2007; Dubat, Punia, & Rashmi Goyal, 2007). Stress levels among adolescents have been going up dangerously due to the pressure of their academic or cultural activities. Not all children can cope with such high levels of expectation and parents do not seem to realize or accept that their children are under severe pressure. (Centre for stress management, 2003; Brobeck.et.al. 2007). It is relevant to mention here that in one year alone in India, 5,857 children, or more than 16 children per day, committed suicide because of failure in examinations (National Crime Records Bureau & Ministry of Home Affairs, 2006-07).This shocking figure underlines the seriousness of this problem and its resounding social costs to communities.

The anxiety related to high scores and good achievement in school education can interfere with endocrine function and produce menstrual cycle disorders (Chung, Yao, & wan, 2005; Sharifian, Farahani, Pasalar, Gharavi,& Aminion, 2005; Totterdell, Spelten, & Pokorski, 1995). Concerning various proposed etiologies of PMS, one of the proposed etiologies of PMS is that it is cyclicity and stability of
hormones, so interference in the menstrual cycle from stress may influence the stability of hormones, leading to PMS (Halbreich, 2003).

Mistyrichards et al. (2006) conducted study on premenstrual symptoms and perimenopausal depression. Result revealed that 26% of the depressed and 9% of the non depressed women reported premenstrual symptoms and 30% reported increase in the negative mood symptoms in the premenstrual period. Similarly Lane and Francis (2003) found that premenstrual symptomatology correlated with locus of control, anxiety and depression, additionally Chau Chang (1998) stated that a high level of trait anxiety was found in adolescent girls who had high level of PMS.

Pearlstein et al. (2000) reported that the morbidity of PMS is due to severity of symptoms, chronicity and the resulting emotional distress or impairment in work, relationships and activities. When assessed by standard measures, the level of impairment of PMS is significantly higher than community norms and is similar to that of major depression. Women with PMS report greatest impairments in personal relationships compromised work levels and increased absenteeism from work.

Stressors and challenges faced by adolescent girls are influenced by premenstrual symptoms. The negative impact of the constellation of PMS on interpersonal relationships and personal well-being is considerable. When women experience PMS or severe PMS, their daily functioning is often disrupted resulting in reduced work efficiency, increased absenteeism from work and a negative impact on family and personal relationships (Barnaud, Frayne, Skinner, & Sullivan, 2003; Borenstein, Chiou, Dean, & Borenstein, 2004; Hylan, Sundell, & Judge, 1999; Robinson & Swindle, 2000; Steiner et al., 2006; Taylor, 1995). As well as PMS is associated with negative health outcomes of depression and physical illness (Lorraine Dennerstein, 2010; Macgeorge, Samter, & Gillihan, 2005). On conceiving that
anxiety and depression experienced by adolescent girls can be associated with the premenstrual symptoms experience as well as vice versa, the researcher decided to measure depression and anxiety in this study to find out the relationship between premenstrual distress, depression and anxiety. As these premenstrual distress, depression and anxiety can be managed by lifestyle modification and stress management. The researcher wanted to apply nursing strategies inclusive of stress management through Yoga Relaxation Technique (YRT).

YRT is a mind body practice in complementary and alternative medicine (CAM). Relaxation techniques usually involve breathing exercises, yoga and meditation. This can help reduce the irritability as well as the mood swings. Newer and bigger challenges are experienced everyday with cut-throat competitions. There is a dire need to learn skills and methods that are simple, rational, and practical, which can give a person the self-empowerment to rise to the occasion and make appropriate decisions, at the right time. The scriptural Indian science of yoga offers an alternative, and is reputed to be an effective and diverse application that appears to simultaneously address the multiple dimensions of personality development. Yoga is believed to increase the faculties of adjustment, which are essential to personality, by developing control over the mind. Jo George (2008) suggested relaxation therapy like breathing exercises, meditation and yoga that will help lessen PMS symptoms.

The symptoms of PMS can also be relieved by practicing calming exercises such as breathing techniques. Deep breathing techniques such as those performed in yoga, can help to relax the body, calm the nerves and reduce stress as well as take the mind off the symptoms of PMS (Daley, 2009). Recreational relaxation activity has been recommended as a method of reducing PMS occurrence and severity. ACOG recommends aerobic exercise, in particular to reduce fatigue and depression.
associated with PMS. The U.S. Department of Health and Human Services recommends regular physical activity as a treatment for PMS and some sources suggest that relaxation exercise is an effective alternative to pharmaceutical treatments in easing PMS.

There are several plausible biological mechanisms by which physical activity can reduce PMS symptoms. Aerobic physical activity may increase endorphin levels (Daley, 2009., Aganoff & Boyle, 1994 ), decrease levels of estrogen and other steroid hormones, improve transport of oxygen in muscles, reduce cortisol levels and improve psychological wellbeing.(Stoddard, Dent CW, Shames, & Bernstein, 2007) All of these mechanisms support an inverse association of physical activity on PMS symptoms. Here physical activity includes walking, hiking, jogging, running, bicycling, aerobics or dancing, tennis or other racket sports, swimming and yoga.

In a clinical trial testing the use of relaxation for treatment of PMS, investigations found a 58% reduction in PMS after three months of daily relaxation compared with 17% to 27% improvement in two control group (Goodale, Domar, & Benson, 1990). Taylor (1996) found that learning proper breathing also reduces the symptoms of anxiety and in 1999 tested a combination of behavioral and cognitive relaxation strategies and found that strategies are very helpful in managing PMS as well as general stress response.

Dvivedi, Mahajan, Mittal and Singhal (2008) stated that PMS is a psychoneuro endocrine stress related disorder and studied the effect of 61-points relaxation exercise (61-PR), a relatively less known hatha yoga technique, a successful means of stress relaxation expected to relieve PMS as well. The study was conducted on 50 clinically healthy women volunteers who were in their reproductive age group and in their premenstrual period. The results suggest a reduction in
sympathetic activity by 61-PR and also the high basal sympathetic tone present in subjects of PMS group due to stress. 61-PR is effective in providing relief from PMS and may be a useful adjuvant to medical therapy of PMS and other stress disorders.

Arias, Steinberg, Banga and Trestman (2006) identified 82 studies, 20 randomized controlled trials in their systematic review of the efficacy of meditation, meditative prayer and yoga relaxation techniques as treatments for medical illness. The studies included 958 subjects totally (397 experimentally treated, 561 controls). No serious adverse events were reported in any of the included or excluded clinical trials. Serious adverse events of relaxation techniques reported in the medical literature are rare. On the other hand the strongest evidence for efficacy was found for epilepsy, symptoms of PMS and menopausal symptoms. Benefits were also demonstrated on mood and anxiety disorders, autoimmune illness and emotional disturbance in neoplastic disease. The results support the safety and potential efficacy of meditative practices for treating certain illnesses, particularly non psychotic mood and anxiety disorders. Anne Ahira (2010) cited in her research that recent studies have shown that yoga and meditation to be beneficial for many types of health related conditions including relieving of symptoms associated with PMS. Unfortunately clear and reproducible evidence supporting efficacy from large, methodologically sound studies is lacking.

Researchers also identify pharmaceutical management and provision of education on PMS to be yet another effective strategy to manage PMS. The findings of the studies that highlight the effects of educational programmes on PMS are as follows. Kim (2006) conducted a study to identify the effects of PMS nutritional education program among student nurses, 29 in the experimental group and 27 in the control group. The experimental group participated in PMS nutritional education
program for 8 weeks. Data were collected before and after the education with the measurement tools focused on premenstrual symptoms, PMS knowledge and self care behaviors. After the intervention, the experimental group showed a significant increase in knowledge regarding PMS ($Z=6.32, p=.000$) and self care behaviors ($t=3.00, p=.004$) compared to the control group. These results suggest that the short term effects of a PMS nutritional education program for student nurses has proven useful and the program should be applied to PMS clients as well as health professionals.

Similarly, Seideman (1990) studied the effect of an educational program on PMS with 47 women employed in an industrial setting. The results showed a significantly reduced occurrence of anxiety and craving symptoms among subjects in the experimental group as well as a significant decrease in the severity of edema symptoms. In another study, Janita Chau and Anne Chang (1997) developed an educational program to determine its efficacy in increasing knowledge and decreasing the severity of PMS symptoms. Immediately following the educational program, the schoolgirls in the experimental group had significantly increased knowledge scores as measured using the premenstrual syndrome knowledge questionnaire. Three months following the educational program, schoolgirls in the experimental group reported a significant reduction in total PMS scores.

It is vital for community health nurses to disseminate the above mentioned information such as relaxation exercises and educational program on practice of PMS self-care measures which were identified to be effective in reducing the severity of PMS symptoms. So also, the community health nurses need to emphasize on health protection, maintenance, promotion and disease prevention, as well as self reliance among clients. Regardless of whether the clients are individuals, families or group,
the goal should be to promote health through various strategies like education on the prevailing health problems, proper nutrition and beneficial forms of exercise (Marcia Stanhope, 2006). Realizing the need for holistic approach nowadays there is more emphasis in evaluating educational programs in terms of improvement in individuals' health status (Janita, Chaw, Anne, & Chang, 1997) including physical and psychological well-being. With this reason, the researcher decided to use theory-based behavioral change health education which includes two interventional strategies namely interactive teaching-learning session on menstrual health, hygiene and lifestyle modification for PMS (Cognitive) and YRT practice (Behavioral) for adolescent girls with PMS.

Researches on premenstrual symptoms have provided solid evidence of high prevalence, severity and patterns of symptoms. The relationship between symptoms experienced and stressful life context have also been explored. However, an important omission from extant literature is identification and description of premenstrual symptoms in narrower age ranges of women, such as among 14-18 year old adolescents. So also, in specific, the management of PMS with yoga relaxation technique and education has not been investigated in the past using the adolescent group. As adolescent period is an important and sensitive phase, premenstrual distress, depression and anxiety may hamper young women in their ability to achieve their goals and complete the rigors required for higher educational achievement. It can cause an impact on the adolescents health and quality of life, decreasing their self esteem, creating lack of self confidence and there by subsequently affecting their relationships with significant others. On reaching adulthood, these effects may further give rise to problems like broken engagement, marital distress. To foster healthy behavioral changes, this study aims to examine the effectiveness of cognitive-
behavioral nursing strategies on premenstrual syndrome among adolescent girls. The underlying assumption of this study is that practice of yoga relaxation exercise with supportive therapy including reassurance and education about physiologic changes and dietary changes can reduce the symptoms of PMS (premenstrual distress, anxiety, and depression) and enable them to achieve their goals in life. Furthermore, this study hopes to create a standardized treatment protocol that could be followed by adolescents with PMS on a larger scale.

1.3 Statement of the Problem

A study to determine the effectiveness of Cognitive Behavioral Nursing Strategies on premenstrual syndrome among adolescent girls at selected schools in Thiruvallur district, Tamil Nadu, India.

1.4 Objectives

The objectives of the study are to

1. Evaluate the effectiveness of Cognitive Behavioral Nursing Strategies on PMS among adolescent girls.
2. Identify the relationship among premenstrual distress, anxiety and depression of adolescent girls.
3. Associate selected background variables (age, BMI, class performance, exercise, menarche age, class missing during menstruation, menstrual duration, menstrual flow, pain during menstruation and place of residence) with PMS among adolescent girls.

1.5 Research Hypotheses

H1: There is a significant difference in the premenstrual distress among adolescent girls who participate in the Cognitive Behavioral Nursing Strategies than who do not.
**H2:** There is a significant difference in the anxiety among adolescent girls who participate in the Cognitive Behavioral Nursing Strategies than who do not.

**H3:** There is a significant difference in the depression among adolescent girls who participate in the Cognitive Behavioral Nursing Strategies than who do not.

**H4:** There is a significant difference in the knowledge on PMS among adolescent girls who participate in the Cognitive Behavioral Nursing Strategies than who do not.

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### 1.6 Operational Definitions

**Effectiveness:** An art of estimating the outcome of the Cognitive Behavioral Nursing Strategies rendered to adolescent girls on the level of premenstrual distress, anxiety, depression and knowledge on PMS. The pre and post test scores were obtained using the following tools, standardized Moos Menstrual Distress Questionnaire (Rudolf H. Moos 1968), State Trait Anxiety Inventory (Charles D. Spielberger 1971), Beck's Depression Inventory (1961), PMS knowledge questionnaire and were compared to identify the improvement.

**Cognitive Behavioral Nursing Strategies (CBNS)**

The strategies include (a) Cognitive nursing strategies and (b) Behavioral nursing strategies.

**a. Cognitive nursing strategies**

It refers to the Interactive Teaching Learning Sessions (ITLS). It is an organized method of imparting detailed instruction about menstrual health, hygiene and lifestyle modification for PMS to adolescent girls. The teaching was imparted by the researcher through a lecture cum discussion method using visual aids like charts, pamphlet and black board in group sessions of 120 minutes, split in to three teaching sessions of 40 minutes each. A total of 8 groups with 20 adolescent girls in each group were grouped for the teaching sessions. The content of the education includes
(1) Review of structure and function of female reproductive organs, (2) Physiology of menstruation, (3) Myths and misconceptions about menstruation, (4) Definition of PMS, (5) Causes of PMS, (6) Symptoms of PMS and (7) Life style measures for managing PMS and (8) Self help measures to manage stress, to provide self care during menstruation and to deal with menstrual cramps.

b. Behavioral nursing strategies

It includes demonstration of yoga relaxation techniques, a practice based on the patanjali yoga principles of Integral yoga school. The various techniques practised were

- Asanas – Vajrasana, Bhujangasana, Matsyasana
- Pranayamas – Surya Anuloma Viloma, Candro Anuloma viloma
  - Nadi Suddhi Pranayama, Bhramari Pranayama
- Yoga Relaxation – Yoga Nidhra

The steps, general instructions before performing yoga relaxation techniques and its advantages were explained through lecture cum discussion and demonstration methods as a group session for 40 minutes. A total of 8 groups with 20 adolescent girls in each group were grouped for the demonstration session. The above mentioned yoga relaxation techniques were once again demonstrated to the adolescent girls of the study group for an hour and were made to practise for 30 minutes every day for 40 school days (from 8th day to 60th day after cognitive nursing strategies) under the researcher’s guidance. The adolescent girls were advised to practice them regularly. The level of performance of yoga relaxation techniques were assessed using a practice checklist at the end of 38 days and 68 days.
**Premenstrual syndrome (PMS)**

PMS refers to a group of physical and psychological symptoms occurring during the luteal phase of menstrual cycle and relieved by the onset of menses and in this study PMS includes premenstrual distress, anxiety and depression.

**Premenstrual distress**

Cyclic recurrence of a complex physical and behavioral symptoms, including pain, behavioral changes, dizziness, faintness, water retention, negative effect, arousal (excitement, feeling of well-being), control, irritability, changes in appetite, bloating, breast soreness, and changes in muscular coordination. Out of these symptoms, one or more may be experienced during the luteal phase that resolves shortly following the beginning of menstruation. In this study, luteal phase refers to the five days before menstruation. The premenstrual distresses of the adolescent girls are identified using daily symptom dairy and measured using the Standardized Moos Menstrual Distress Questionnaire.

**Anxiety:** Anxiety is an unpleasant emotional state consisting of two distinct forms namely the state anxiety and trait anxiety.

**State Anxiety (S-Anxiety)**

It is an unpleasant subjective feeling of tension, apprehension, nervousness, worries and activation of autonomic nervous system during the luteal phase as measured by the Speilberger State Trait Anxiety Inventory (STAI form Y-1).

**Trait Anxiety (T-Anxiety)**

Trait anxiety denotes relatively stable individual differences in anxiety proneness and refers to a general tendency to respond with anxiety to perceived threats in the environment. It is measured using the STAI form Y-2.
**Depression**

Depression is a state of mind which is characterized by a negative sense of inadequacy and lack of activity. It is a mental state in which the person affected experiences feelings of gloom and downturn in mood, which may be relatively transitory and may be due to something complex. The common behavior includes feelings of sadness, despair, low self-esteem, low self-reproach and discouragement. In specific to the study this could be experienced by the adolescent girls during the luteal phase. It is measured using the standardized Beck Depression Inventory.

**Knowledge on PMS**

Adolescent girls verbal responses regarding the physiology of menstruation, myths and misconceptions about menstruation, definition of PMS, causes, symptoms and life style measures for managing PMS. Improvement in knowledge on PMS and menstruation among adolescent girls were measured using PMS Knowledge Questionnaire. The difference between pretest and post test scores conducted during the 16th day and 38th day after pretest was calculated as knowledge gained.

**Adolescent girls**: Girls in the age group of 14 – 18 years formerly admitted and enrolled in 9th standard or 11th standard in selected girl’s higher secondary schools of Thiruvallur District and have been identified to have premenstrual distress and depression as detected using Moos Menstrual Distress Questionnaire and Beck Depression Inventory.

**1.7 Assumptions**

- Troublesome symptoms need management
- Knowledge promotes healthy behavior
- Early detection of premenstrual syndrome promotes mental health
- Yoga enhances the sense of well being and can be practised by any one.
- A relaxed mind influences the perception of events.