CHAPTER -II
REVIEW OF RELATED LITERATURE

Introduction:

The present chapter expands the previous chapter via a review of scientific literature involving concepts integral to the present study. Researcher has reviewed books, scholarly articles, research papers, journals and doctoral theses for supporting statement of the problem, significance of the study, defining variables, formulating hypotheses, construction and selection of tool, construction of training program, analysis and interpreting data and for drawing conclusions. The reviews are summarized in this chapter.

2.1 Review of Related Literature:

2.1.1 Adolescences, developmental changes during adolescence years and their impact on them:

Adolescence is a developmental transition between childhood and adulthood. It is generally considered to begin at about age 12 or 13 and to end in the late teens or early twenties. It is generally considered as beginning of puberty, the process that leads to sexual maturation when a person is able to reproduce (Papilia and Olds, 2000).

Puberty occurs in response to changes in the body’s hormone systems which are triggered by some physiological signal. Whatever the signal is, its response in a girl is for her ovaries to sharply step-up their production of the female hormone estrogen. Both boys and girls have both types of hormones, but girls have higher level of estrogen and boys have higher levels of androgens (Tobin, R., et al. 1984). As early as age 7 the levels of these sex hormones begin to rise, setting the events of puberty in motion. Estrogen stimulates growth of the female genitals and development of the breasts. Hormones are also closely associated with emotions, especially with aggression in boys and both aggression and depression in girls (Brooks-Gurn, 1988).

In women’s life puberty and adolescent period is very much important. In females certain biological changes signal the end of childhood and indicates adolescent growth spurt. Papilia and Olds (2000) describe the maturation process in girls and physical changes taken place in female’s body in his book. He explains, an
early sign of maturation is a dramatic increase in height and weight. A girl’s pelvis widens during adolescence to make childbearing easier, layers of fat are laid down just under the skin, giving her a more rounded appearance. The primary and secondary sex characteristics begins to appear in female body. The primary sex characteristic is the gradual enlargement of ovaries, uterus and vagina occurs during puberty. The secondary sex characteristics are the physiological signs of sexual maturation that do not directly involve the sex organs. It includes the breasts of female. Usually budding of the breasts is the first sign of puberty for girls. The breasts are fully developed before beginning of menstruation. Other secondary sex characteristics involve changes in the voice, skin texture and body hair. Various forms of hair growth, including pubic hair and axillary (armpit) hair also signal maturation. The skin of adolescent girls becomes coarser and oilier and the increased activity of the sebaceous glands causes outbreaks of pimples and blackheads.

The principal sign of sexual maturity in girls is menstruation or menarche – the first menstruation. Girls begin to show pubertal changes at year of 9 to 16. The menarche age may vary girl to girl. The mean age of menarche is typically between 12 to 13 years (Herman-Giddens et al, 1997; Flug, et al., 1984; Widholm et al. 1971). Ruble and Brook Gunne, (1982) says menarche is more than a physical event; it is “a concrete symbol of a shift from girl to women”.

Girls who have begun to menstruate seem more conscious of their femaleness than girls of the same age who have not yet reached menarche. As is true at all ages, there are individual differences in physical changes (Papilla and Olds, 1997; Hurlock, 1981; Feldman, 2004). Siegel (1982) says, most young teenagers are more concerned about their looks than about any other aspect of themselves, and many do not like what they see in the mirror. Adults often dismiss adolescents’ preoccupation with their looks. But in a society in which personality is often judged by appearance (Dion, Berschied and Walster, 1972), self-image can have long-lasting effects on young people’s feeling about themselves.

Physical or bodily changes is directly associated with physical self-concept in adolescent girls. According to Hurlock (1981), few adolescents experience satisfaction with their bodies while others do not. However some girls do experience more dissatisfaction with some parts of their bodies than other parts. This failure to
feel satisfy with their bodies is one of the cause of unfavorable self-concept and lack of self-esteem during adolescent years (Mahoney and Finch, 1976). Hurlock (1981) further states that, clumsiness and awkwardness are more serious during adolescence than at any other time during the life span.

If their skills and motor development are not on a par with those of their friends, adolescents cannot take part in the games and sports that play such important roles in their social lives. This has serious impact on their social adjustments as well as on their self-concepts. Besides the physical appearance and motor abilities, age of maturing, sex appropriateness (which makes them self-conscious as well as influence their favorable behavior), names and nick names, family relationships, peers influence, creativity (in their play and academic work) and level of aspiration (high and unrealistic aspirations lead to failure while adolescents having realistic aspirations experience more success contributing to better self-concept) these factors affect physical as well as social self-concept.

According to Hurlock (1981), one of the most difficult developmental tasks of adolescence relates to social adjustments. These adjustments must be made to members of the opposite sex in a relationship that never existed before and to adults outside the family and school environments. To achieve the goal of adult patterns of socialization, the adolescent must make many new adjustments, the most important – and the most difficult is the increased influence of the peer group, changes in social behaviour, new social groupings, new values in friendship selection, new values in social acceptance and rejection, and new values in the selection of leaders (Greenberger, et al., 1975). During early adolescence the individual’s interests shift from the strenuous play activities of childhood to the less strenuous and more formal social activities of adolescence (Hurlock, 1981).

Traditionally, adolescence has been thought of as a period of “storm and stress”- a time of heightened emotional tension resulting from the physical and glandular changes that are taking place (Hurlock, 1981). According to Rutter, et al. (1976), adolescent emotionality can be attributed mainly to the fact that boys and girls come under social pressures and face new conditions for which they received little if any preparation during childhood. Not all adolescents, by any means, go through a period of exaggerated storm and stress. Adolescent emotions are often intense,
uncontrolled and seemingly irrational. The emotional patterns of adolescence, while similar to those of childhood, differ in the stimuli that give rise to the emotions and even more important, in the degree of control the individuals exercise over the expression of their emotions.

Typically, young adolescents complain about school in general and about restrictions, homework, required course and the way school is run. They are critical of their teachers and the way they teach. According to Hurlock (1981), less prestige is associated with academic achievement among girls than for boys. Adolescent’s vocational interest influences their attitude towards education greatly. If they are aspiring to occupations which require education beyond high school, they will regard education as a stepping-stone. There are many factors that influence the adolescent’s attitude towards education. The most important of these are; peer attitude, parental attitude, grades which indicate academic success or failure, the relevance or practical value of various courses, attitude towards teachers, administrators, and academic as well disciplinary policies, success in extracurricular activities and degree of social acceptance among classmates. For many adolescents interest in school subjects are influenced by how relevant they perceive the subject to be.

Adolescents develop intellectually and become able to think abstractly even though they have somewhat egocentric thoughts. They are capable of hypothetical-deductive reasoning. Jean Piaget (1969) saw adolescents entering the highest level of cognitive development. This level is called as formal operations. Piaget (1969) says when reached to the formal operations stage they become capable of considering all possible ways of solving a particular problem and can reason on the basis of hypotheses or propositions. Thus they can look at their problems from several points of view and can take many factors into account when solving them. An adolescent has a new flexibility and complexity of thinking.

Moral development generally continues in adolescence, as the ability to think abstractly lets them understand universal moral principles (Papilla and Olds, 2008). They are expected to replace the specific moral concepts of childhood with general moral principles and to formulate these into a moral code which will act as a guide to their behaviour (Hurlock, 1981; Papilla and Olds, 1997). Adolescents apply moral reasoning to many kinds of problems, from lofty social issues to personal choices.
Anxieties are very common in adolescence period (Feldman, 2004). Adolescents concerns about physical changes occurred at puberty. Adolescent girls are more prone to depression than boys, mainly because of worries about their appearance (Lewinsohn, 1990; Rierdan, Koff and Stabbs, 1988). Some of the concerns adolescents have about normalcy, sex-appropriateness, and social reactions to their body type. For many girls, menstruation is a serious concern. This is because they suffer physical discomforts such as cramps, weight gain, headaches, backaches, swollen ankles, breast tenderness and experience emotional changes, such as mood swings, depression, restlessness, depression and a tendency to cry without apparent reason. Acne and other skin eruptions are a source of concern to both boys and girls. The tendency towards obesity is also a source of concern during early adolescence. The reason for concern comes from realization of the role attractiveness plays in social relationships.

Concluding Remark:

The researcher had deeply reviewed the literature for understanding the developmental changes taken place in adolescents. Researcher studied physical, physiological, social, emotional, educational, intellectual, and moral changes/development that occurred during adolescent years. Reviewing the literature researcher could determine the dependent variables of the study. Researcher concluded from the literature that the psychological problems such as self-concept and anxiety are the most important problems during adolescent girls. Literature helped researcher to select the tool for measurement of self-concept of adolescents containing six dimensions of self-concept.

2.1.2 Problems during Menstrual cycle of Adolescent girls:

There are many evidences of the positive influence of regular physical activity on the menstrual cycles of pubescent girls. When moderate physical activity is part of their lifestyle, girls report less physical distress associated with the cycle and increased regularity. To be sure, exercise has some well-known benefits for the menstruating woman. Everyone knows the teen years can be difficult — for both teens and parents. All those physical changes during puberty can make adolescents feel awkward and unsure of themselves. This is particularly true for girls when it comes to menstruation. For a girl, getting her first period is a physical milestone and a
sign of becoming a woman. But it can also be confusing and scary, particularly if she encounters certain physical or psychological problems. Different girls may have some or all of these symptoms in varying combinations. Because of changing hormone levels and their effect on chemicals in the brain the premenstrual and menstrual problems occurred.

Brody, J. E., (1982), explains that the problems and disorders related to menstruation depend upon the hormonal changes during menstruation cycle. The degree of discomfort experienced during menstruation varies from woman to woman. Some are never bothered by their periods, while others can be badly affected by unpleasant symptoms. These may include: pains in the abdomen, pain in the vagina, feeling nauseous and generally unwell, diarrhoea, sweating, and fatigue.

Karthiga, V., Boratne, A. V., Datta, S. S., Joice, S., Billy Abraham, S., and Purty, A. J., (2009) surveyed menstrual problems and pattern of consultation among adolescent school girls in Pondicherry as menstruation and related problems are difficult issues for teens. For this purpose, 371 adolescent girls who attained menarche were selected from four schools and interviewed using predesigned pretested questionnaire. From the analysis of the data, it was found that, 193 (52.02%) had experienced dysmenorrhoea and 150 (40.43%) reported passing of clots during menstruation.

Sharma, P., Malhotra, C., Taneja, D. K., and Saha, R., (2001) have studied the types and frequency of problems related to menstruation in adolescent girls and the effect of these problems on daily routine. They found that, dysmenorrhoea (67.2%) was the commonest problem and 63.1% had one or the other symptoms of Premenstrual syndrome (PMS). Daily routine of 60% girls was affected 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 work.

Deo, D. S., and Chatterji, C.H., (2007) observed fullness in breast and abdomen was the commonest premenstrual symptom while abdominal pain was the commonest menstrual symptom in their study. They also found dysmenorrhoea was the commonest menstrual disorder. They observed, 8.33% girls remained absent from
school due to some or other menstrual disorders during last menstrual period. Dysmenorrhoea was commonest menstruation related reason for school absenteeism.

The Girls' and women's Education Policy Research Activity (GWE-PRA-2001) carried out a study which found physical discomfort and unpleasant feelings (odors and soiled clothing) experienced during menstruation lead to school absenteeism and a perception of the need to stay at home. The school environment makes it difficult for girls to attend and participate in school during menstruation because of the lack of bathroom facilities, water, and sanitary supplies, as well as the distance from home to school. Findings indicate that school rules and regulations (such as the requirement to participate in certain physical exercises) do not always respond to girls needs. The discomfort caused by menstruation, aggravated by anemia and malnutrition, contributes to poor school performance and absenteeism, which may result in dropping out of school.

Symphorosa, S. C., Chan, K.W., Yiu, P. M., Yuen, D. S., Sahota, Tony, K. H., and Chung, (2008) have studied menstrual problems and health-seeking behavior in Hong Kong Chinese girls. They have observed the prevalence of menorrhagia, dysmenorrhoea, and menstrual symptoms were 17.9% (95% confidence interval, 16.9-19.1%), 68.7% (67.7-70.3%), and 37.7% (36.7-39.3%), respectively. The prevalence of menstrual symptoms (P<0.001) and dysmenorrhoea (P<0.001) increased with gynecological age (calendar age minus age at menarche), whilst the proportion having short or long cycles decreased (P=0.002 and P=0.009). One in eight girls reported having been absent from school, whilst only 6.4% had sought medical care because of menses. Multivariate analysis indicated that seeking medical care for menorrhagia was dependent on the opinion of a family member (P=0.005), and for dysmenorrhoea on its severity (P=0.046) and anxiety about embarrassing questions (P=0.039).

Karthinga, et al (2009) suggested adolescent girls should be screened for menstruation related problems and provides them with counseling services and relevant information on possible treatment options. Besides, there is a need to emphasize on designing menstrual health programmes for adolescents. Similarly, the results of the study (Sharma et al., 2001) concluded that, there was an urgent need for
strong health educational activities among the adolescent girls, their parents and teachers for effective management of menstrual problems among all adolescent girls.

**Concluding Remark:**

The researcher reviewed the literature, research papers and articles for supporting her statements regarding the seriousness of the research problem. The reviews shown that due to painful menstruation and discomfort girls preferred to stay absent for the school or did not participate in physical activity class. Strong health educational activities and school initiatives must be needed for adolescent girls. Above studies also helped researcher for deciding the main aspect of the questionnaire, i.e. major problems during menstruation cycle.

### 2.1.3 Psychological Problems of Adolescent girls:

Self-concept is very important and essential in developing a child personality (Yahaya, n.d.). The adolescent time period is a difficult time period when the self-esteem and self-concept of an individual is particularly susceptible to being damaged or at least challenged (Feliciano, n.d.). Self-concept is the way people think about themselves (Saraswat, 1981). It is the unique, dynamic and always evolving. This mental image of one-self influences a person’s identity, self-esteem, body image and role in society. Self-concept shapes and defines who we are, the decisions we make and the relationships we form. Self-concept is student’s perceptions of competence of adequacy in academic and non-academic (e.g. social, behavioral and athletic) domains. Franken (1995) states that, “Self-concept is perhaps the basis for all motivated behavior. It is the self-concept that gives rise to possible selves and it is possible selves that create the motivation for behavior”.

Adolescence marks numerous physical and hormonal changes. These changes influence the adolescent’s view of one’s body and oneself. Adolescents look to their peers, parents, role models and the media to view what is expected of them (Hurlock, 1981). Many adolescents are experiencing issues with the image of their body weight, shape, size, hair, acne or height. Negative comments and reactions from their peer can cause them to participate in substance abuse, inappropriate sexual behavior and eating disorders as an attempt to fit in. Adolescents often struggle with how to deal with
anxiety and depression, due to these expectations may use self-injury as method of coping or even attempt suicide (Papilla and Olds, 1997).

Manning (2007) gave explanation about development of self-concept in adolescents. According to him students frequently display a decline in self-concept during elementary school and the transition to middle level. Young children tend to overestimate their competence because they lack the cognitive maturity to critically evaluate their abilities and to integrate information from multiple sources. As students develop, they better understand how others view their skills and better distinguish between their efforts and abilities. As a result, their self-perceptions become increasingly accurate (Harter, 1999). As students transition from middle level to high school, their self-concept gradually grows.

Chaplin and John (2007) claimed that children become highly critical of their previously constructed self-concept due to physical changes and the tension between their ideal self- and how they see themselves during the adolescent time period. The perceived level of acceptance by peers has a significant level of importance to a child (Feliciano, n.d.). During the reconstruction of self-concept during the adolescent time period, children are prone to experiment with activities to achieve not only attention, but also acceptance by peer group (Greene and Banerjee, 2008).

The social acceptance of a child is crucial during the adolescent time period. When a child believes social acceptance has occurred, a number of positive effects transpire (Feliciano, n.d.). A factor of acceptance from peer groups includes acceptance based on performance (Andrew, 1984). Performance self-esteem is increased due to successfully performing within a situation which can result in achieving peer acceptance as well as increases self-confidence of child. All adolescents desire to fulfill the criteria peer groups have constructed to achieve social acceptance (Krcmar, Giles and Helme, 2008). Adolescent girls have self-images regarding their weights and physical body images (Krcmar, Giles and Helme, 2008).

Yahaya (n.d.) describes several different components of self-concept as physical, academic, social, and transpersonal. The physical aspect of self-concept relates to that which is concrete: what we look like, our sex, height, weight, etc.; what kind of clothes we wear; what kind of car we drive; what kind of home we live in; and so forth. Our academic self-concept relates to how well we do in school or how well
we learn. There are two levels: a general academic self-concept of how good we are overall and a set of specific content-related self-concepts that describe how good we are in math, science, language arts, social science, etc. The social self-concept describes how we relate to other people and the transpersonal self-concept describes how we relate to the supernatural or unknowns.

Self-concept is something very dynamic that can change from time to time. Some aspects of self-control remain for a long period but other can turn the opposite way in few seconds.

Anxiety is a feeling that is common to us all. It is a natural reaction to certain situation and circumstances and is characterized by a fear of apprehension of what might happen or what the future might hold. Medication in the form of tranquillizers and sleeping pills is usually only used as a short term measure in cases of severe anxiety. Other treatments such as talking treatments are generally more effective in developing coping strategies to cope anxiety. Anxiety can impact on other areas of life like, ability to perform at work or relationships with friends and family. Anxiety is proven a persistent psychological problem among children and adolescents that may become chronic and may carry a risk of current or later functional impairment if not adequately treated (Rajpoot and Vaishnav, 2014).

Kokinakis, (2011) Adolescents face numerous biological, cognitive and emotional changes and Yoga may support young people as they transition through the potentially rocky adolescent years. Research on meditation and exercise suggests that these components of yoga have effects on adolescents’ cognition and psychological well-being (Kokinakis, 2011).

Ashtani, et al. (2007) has surveyed personality characteristics of adolescents such as self-concept, self-esteem, anxiety, depression and their associations with academic achievement. Total 1314 students of Tehran’s High schools were assessed for respective personality characteristics. They observed that self-concept is correlated with self-esteem and these two have positive impacts on augment of academic achievement. Moreover, the increase of self-concept and self-esteem are related to the decrease of anxiety.
Fite et al. (1992) has shown an inverse correlation between anxiety and self-concept, indeed high anxiety is relevant with low self-concept. Similarly, study results of Knapen, et al. (2005) showed improvements in physical self-concept has potential role in the recovery process of depressed and anxious psychiatric patients. Low self-concept is often considered a defining characteristic of depression Manning (2007).


In recent years, there has been evidence of disturbingly high rates of mental ill-health among adolescents and even younger children, ranging from low-self-esteem, anxiety and depression to eating disorders, substance abuse and suicide (Sallis, J. and Owen, N., 1999). Adolescent girls are particularly vulnerable to anxiety and depressive disorders: by 15 years, girls are twice as likely as boys to have experienced a major depressive episode (Nolen-Hoeksema, S. and Girgus, J., 1994); Research suggests two ways in which physical activities can contribute to mental health in girls. Firstly, there is fairly consistent evidence that regular activity can have a positive effect upon girls’ psychological well-being; indeed, some studies indicate that girls may respond more strongly than boys in terms of short-term benefits (Friedman, E. and Berger, B., 1991). Secondly, research has indicated that physical activity can contribute to the reduction of problematic levels of anxiety and depression.

Concluding Remark:

Above studies helped researcher to determine most common psychological problems of adolescent girls during menstruation cycle and to understand relationship between them. Researcher found self-concept and anxiety are the common problems faced by adolescent girls.

2.1.4 Yoga as a remedy for physical problems during Menstrual cycle of adolescent girls:

Yoga is one of the most precious inheritances of Indian civilization (Bajpai, Rajak and Rampalliwar, 2015). Yoga has answer for the menstrual problems of girls. Some Yogic postures have been remaining effective to reduce the problems occurring
during and before menstrual cycle. Researcher found out the evidences for the effectiveness of the yogic postures. Yoga is appraised to be one of the most important, efficacious and valuable tools available to overcome various physical and psychological problems (Jadhav and Havalappanavar, 2009).

Yoga has been remaining very much effective for relieving pre-menstrual syndrome. There are some remedial asanas for reducing pre-menstrual problems like Makarasana (crocodile posture), Balasana (the child’s pose) Headaches, unusual cravings for food, bloating, and a host of other unpleasant physical symptoms often accompany PMS, besides anxiety and sustained tension (Iyengar, 2008a). These symptoms are caused by both physiological and psychological factors for which yoga can provide a therapy. Iyengar (2008) writes about these menstrual disorders, “Yoga asanas and Pranayama correct the faults or the malfunctioning of the organs”. They ease the uterine muscles and ensure proper menstrual flow. Psychological tensions can also be subsided through the practice of savasana (Iyengar, 2008). Savasana allows the body to completely rest, releasing all unnecessary stress. Savasana is not just a practice for menstrual pains though; it is recommended for every completed yoga session because the body’s inherent energy and peace are restored through rest (Haddorff, 2005).

According to Patricia (2008), Paschimottanasana (The Posterior Stretch), Janu Sirshasana (The Head to Knee Posture), Ardha Chandrasana (Half Moon Pose), Pavanamuktasana (The Wind Relieving Pose), Shavasana (The Corpse Pose) if practiced gently, followed by controlled breathing technique of Anuloma-Viloma (Alternate Nostril Breathing) and meditation will gradually improve menstrual problems of women like; menstrual cramps, heavy bleeding, low back pain and other feminine disorder. The combined practice of Yoga poses and Pranayama (Rhythmic Breathing technique) revives the body, regenerates different glands and creates harmony within the body and nervous system.

Research suggests that there are certain hereditary factors that play a role in the level of pain and discomfort a woman experiences along with menstruation. A painful and very heavy menstrual cycle and anemia are closely related and so it is important to treat anemia as soon as the diagnosis is confirmed (Iyengar, 2008).
Adolescents with eating disorders suffer from a lack of self-esteem, according to the National Eating Disorders Association. Because Yoga links awareness of breath with mindful movements, it may help adolescents with eating disorders develop an internal focus (versus external comparison) and increase bodily relaxation. As a result, perception of overall well-being should increase. In a study done by Fury, and Kaley-Isley, (2006) a yoga class was added to the Eating Disorders Unit (EDU) schedule at the Children’s Hospital in Denver to explore whether adolescents’ perception of overall well-being changed after Yoga. Fifty-five adolescents aged 13-20 years (51 females) in the EDU program participated in weekly one-hour group Yoga classes from February 2005 to July 2006. Data was gathered for 26 classes, resulting in 165 participant responses. Participants’ length of stay varied from 1-10 weeks. Classes consisted of a balanced flow of postures ending in relaxation pose. Three instructors alternated teaching and assisting. Participants reported their overall well-being before and after class. Yoga was taught to adolescents with eating disorders to explore whether it is an effective intervention for eating disorders. Nearly 75% of participant responses indicated an increase in well-being after Yoga. To test whether adolescents’ improved perception of well-being leads to increased self-esteem, an expanded study is needed.

Concluding Remark:

Above research studies reveals the beneficial effects of Yoga (Asanas and Pranayamas) on various problems occurred during menstrual periods.

2.1.5 Surya Namaskar: One of the best Yogic practice:

Surya Namaskar is one of the best exercises that people can perform. The benefits occurring from these exercises are unique and excellent. Dalvi (2012) in her article says Surya Namaskar is the art of solar vitalization. It energizes the body through a combination of stimulation and relaxation techniques (Nandar and Urs, 2014). It is complete meditative technique as it includes Asanas, Pranayamas, Mantras and Mudras. Surya Namaskar is experienced on three levels; body, mind and intellect. It works with equal force on three aspects Dalvi (2012). This is a Yoga based exercise and it is customary to perform Surya Namaskar after performing loosening yoga exercises. Surya Namaskar is a series of twelve postures. These are
having flexion, extension, forward bending, backward bending, stretching, squeezing, inhalation, exhalation, and compression (Nandar and Urs, 2014).

*Surya Namaskar* is a part of Indian traditional yogic practices (Bhutkar, et al., 2008). *Surya Namaskar* means prayer of Lord ‘Sun’- the biggest and ultimate source of energy on this planet. The ‘*Rigveda*’ (the ancient scripture) the one of the earliest *Veda* devotees mainly verses to the praise of the sun. Khardekar (2007) wrote about the tradition of *Surya Namaskar in his book*. He mentioned, in ancient time may be six thousand years ago, students of the age 8 to 20-25 years took education at the residence of their teacher i.e. in the *Gurukul*. In those days in the *Gurukul*, the day started long before sunrise and the first session was “*Suryopasana/ Surya Namaskar* (worshiping the Sun God), *Sandhya Vidhi* and *Gayatri Japa*.” Historically it is widely believed in the State of Maharashtra that, Shivaji Maharaj, Sage Samarth Ramdas and Marathas have performed *Surya Namaskar* as a physical exercise to develop able bodies (Nandar and Urs, 2014). This may be related to *Vyayama* being traditionally influenced by spiritually.

There are seven *Chakras* in the body. Each one represents an important centre of the body’s and mind’s energy as well as different stages of spiritual development. The *Chakras* are aligned from root to crown. The main aim of *Yoga* is to awaken and raise the energy through the body from root to crown. When *Pran* flows smoothly through our body, the *Chakras* spin brighter and faster and the body and mind are in a state of perfect hormony ((Dalvi, 2012).

Dalvi (2012) in her article explained physical and mental benefits of *Surya Namaskar* and given proper breathing technique in *Surya Namaskar*. She revealed the importance of breathing in all twelve sequences. While moving into all the sequences it is important to understand that the transition should be done either with inhalation or with exhalation with the movement. Due to specific breathing pattern, the entire body gets oxygenated. Further Dalvi (2012) explains, the muscles which are being used during the pose will get more oxygen and therefore less toxins will be accumulated which will prevent pain in the muscles. It stretches about 97% of the body muscles and improves the general physical fitness by strengthening the joints and ligaments and enhances the flexibility and postures (Dalvi, 2012). Nag, Chakravarthy and Burra (2013) have carried out a study on 113 unmarried girl
students of age group 18-23 years with primary dysmenorrhea (painful menstruation). Of which 60 girls were given yogic practice including *Yogasanas* and *Surya Namaskar* for 3 months. The session includes 40 minutes Yoga class and 10 minutes meditation. Researchers found that 88.33% subjects reported complete pain relief. There was significant (p<0.0001) reduction in the pain perceived after yoga intervention. After yogic intervention, the absenteeism came down to 10.3 % in the study group.

Alternate contraction and relaxation of abdominal muscles tone up the abdominal organs and improves their functions. Especially organs of digestive system are benefited (Barsing and Mishra, 2015; Nandar and Urs, 2014).

*Surya Namaskar* promotes flexibility of back and hip, stimulate nerves in spine, stretches back and leg muscles, and strengthen muscles (Nandar and Urs, 2014).

It is also considered to have a great spiritual impact on the mind and the soul. And thereby elevate the concentration level and stimulate the *Chakra* points in the body (Dalvi, 2012). As *Surya Namaskar* tones up the nervous system by stretching and bending the spinal column and regulates the sympathetic and parasympathetic nervous systems, it controls activities in the uterus and ovaries, increases spine and waist flexibility as well as refreshes skin and clears complexions (Naik, 2013).

Veeraparameswari and Senthilkumar (2014) have studied effects of *Surya Namaskar* Practices on selected bio-chemical parameters of college women in comparison with physical exercises. They underwent 12 weeks *Surya Namaskar* and physical exercise programmes on two different groups (n= 20 each) of 60 college women in Madurai district. *Surya Namaskar* intervention includes slow, medium and fast variations of *Surya Namaskar*. The bio-chemical variables- fasting blood sugar and total cholesterol were studied. *Surya Namaskar* group found to be better than control group. There was no significant difference found at 0.05 level between *Surya Namaskar* and physical exercise group, though *Surya Namaskar* group found better results than physical exercise.

*Surya Namaskar* burns about 3.79 calories per minutes according to a study by the Defense Institute of Physiology and Allied Sciences in India (Victoria Weinblatt, nd.). It is relaxing and rejuvenating. It melts away tension, stress and anxiety. It is
useful in achieving concentration. It reduces tension, built-up and promotes relaxation of the whole body (Dalvi, 2012). *Surya Namaskar* plays positive and significant role to decrease stress level of the subjects (Kumar, A., 2009). The *Mantras* chanted during sun salutation are effect mentally and relives the stress, depression and anxiety (Barsing and Mishra, 2015). *Surya Namaskar* promotes calmness of mind and subsidizes stress and anxiety level. The practice of asanas develops muscle strength and flexibility which facilitates diaphragmatic breathing (Kauts and Sharma, 2009). Similarly, relaxation and meditation help with diaphragmatic breathing releases physical and emotional tension (Nag, Chakravarty and Burra, 2013).

Anxiety and depression is one of the important risk factors of dysmenorrheal (Nag, Chakravarty and Burra, 2013). According to Sharma (2003) *Surya Namaskar* has positive effect on anxiety level. Kundu and Pramanik (2014) have implemented 12 weeks Yogasana and pranayam program including *Surya Namaskar* on 8-10 years boys and observed significant improvement in self-concept and decrease in anxiety.

Javnbakht, Hejazi, and Ghasemi (2009) have conducted a study on 65 women having symptoms of depression and anxiety and he found that attending a twice-weekly 90 minute yoga class for 2 months leads to a significant decrease in anxiety.

Kanojia, et al. (2013) have studied effect of yoga on Autonomic functions and psychological parameters such as anger, trait anxiety and sense of well being during both phases of menstrual cycle in young healthy 50 females of 18-20 years age group. Selected sample had received 35-40 min./day yoga practice. Researchers have found decrease in anger, depression, anxiety and increase in well being from initial to 2nd and 3rd cycle in pre-menstrual phase at 0.05 level.

Soloman and Gopinath (2014) have given 8 weeks of yogic practices including yogasana and pranayama (Kapalbhati and Shitali) to school students and observed the reduced anxiety level among school students.

Sharma (2014) has assessed the effects of *Surya Namaskar* on stress level of 30 students and patients in Ganguli Hospital, Bhopal (M. P., India). The single group pre-test-post-test experimental design was used for this study. To the selected sample 30 days *Surya Namaskar* training (30 min./day) was given. Stress Researcher concluded that *Surya Namaskar* provides the individual with refreshing experiences and manage the stress to a greater level and also the individual gets rid of taking psychotic and mood refreshing drugs.
Concluding Remark:

Researcher has reviewed literature and summarizes important aspects of it. These references focus on the history of Surya Namaskar, its mental and physical benefits for human being. Researcher also got the scientific relevance of Surya Namaskar with dependent variables of the study.

2.1.6 Yoga Nidra and Problems during Menstrual cycle of adolescent girls:

Yoga Nidra is derived from the tantras is a powerful technique in which one learns to relax consciously. The technique of Yoga Nidra was found and formulated by Swami Satyanand Saraswati of Bihar School of Yoga, 35 years ago when he was living with his Guru (Spiritual master) Swami Shivananda in Rishikesh. (Satyanand Saraswati, 2001; Kumar and Pandya, 2012; Bali, 2012) The term Yoga Nidra is derived from two Sanskrit words, Yoga means ‘union’ or one-pointed awareness and Nidra means ‘sleep’. Swami Satyanand Saraswati (2001) explains Yoga Nidra as a state of mind between wakefulness and dreams, he states, ‘during Yoga Nidra one appears to be in sleep but the consciousness will be functioning at a deeper level of awareness’. Hence it is often referred as to psychic sleep or deep relaxation with inner awareness. Swami Satyanand Saraswati (2001) further explains, when one withdraws the mind a little bit and enter into a state where they are neither deep sleep or completely awake, whatever the impressions enter the mind at that time become powerful and they remain there.

Pradhan (2013) has taken overview of history and origin of Yoga Nidra and explained the meaning of Yoga Nidra with the help of a classical Indian prayers and references in Puranas. He explained, the Lord of the universe reclines on the coiled body of the serpent named as ananta or sesa naga. Ancient seers imitated the ananta-sayana of the Lord of the universe and gave the name Yoga Nidra to the process.

A number of ancient books Devi Mahatmya, the Bhagavata Purana, Durga Saptasati, Vaikrutik Rahasya, mentioned the yogic sleep of Lord Vishnu i.e. Yoga Nidra. It is said in a Verses written in Saptasati, and Vaikrutik Rahasya, the Lord Vishnu gets power in yogic sleep which he gave to the Goddess Durga to fight with Devils (Rakshasa).
Pradhan (2013) further says, *Yoga Nidra* has been practiced for millennia by *sadhus* and *rishis*. In *hatha yoga* there is a discussion of *Yoga Nidra* in fourth chapter which is written by Swami Swatmarama Saraswati.

Swami Sivananda’s true disciple Swami Satyananda particularly began popularizing the practice of *Yoga Nidra* about 35 years ago (Swami Satyananda Saraswati, 1998). He drew a connection to the ancient *tantric* practice called *nyasa*, whereby Sanskrit Mantras are mentally placed within specific body parts, while meditating on each part (of the bodymind) (Pradhan, 2013). The form of the *Yoga Nidra* practice taught by Swami Satyananda includes eight clearly defined stages (Swami Satyananda Saraswati, 1998; Pradhan, 2013). That are;

1. Preparation (Internalization),
2. *Sankalpa*,
3. Rotation of Consciousness,
4. Breath Awareness,
5. Opposite Feeling,
6. Visualization,
7. *Sankalpa*,
8. End (Externalization);

Bali (2013) states *Yoga Nidra* has widespread application in the management of diseases of all kinds and its effect both as a palliative and curative has been investigated in many research centers with extremely positive results. *Yoga Nidra* can be utilized with other medical therapies and also alone. It has been found useful in both acute and chronic conditions especially in degenerative and stress related conditions.

*Yoga Nidra* probably relieves pain by stimulating the pituitary gland to release its own potent pain supressing compounds especially in migraine (Sargent, Green and Walters, 1973; Silver, et al. 1979) and chronic arthritic pain (Varni, 1981). In a study conducted at East Texas University (USA), researchers concluded that yogic relaxation training should be prescribed more frequently as an adjunct or alternative to conventional drug therapy for menstrual pain and disorder (Ferguson, 1981).
Rani, et al. (2013), studied the effect of *Yoga Nidra* practice on hormone levels in patients who had menstrual irregularities. This study involved 150 subjects with menstrual irregularities; 126 of whom completed the protocol. Subjects were divided randomly into 2 groups—an intervention and a control group, with 75 subjects in each group. The yogic intervention duration was 35-40 minutes/day, five times per week for 6 months. An estimation of hormonal profile was done for both groups at baseline and after 6 months. Thyroid-stimulating hormone (p<0.002), follicle-stimulating hormone (p<0.02), luteinizing hormone (p<0.001), and prolactin (p<0.02) were decreased significantly in the intervention group, compared with the control group. The study demonstrated the efficacy of *Yoga Nidra* on hormone profiles in patients with menstrual irregularities. The study results concluded that, *Yoga Nidra* practice was helpful in patients with hormone imbalances, such as dysmenorrhea, oligomenorrhea, menorrhagia, metrorrhagia, and hypomenorrhea.

Khushbu, et al. (2011) has checked effect of six months *Yoga Nidra* programme on somatoform symptoms in menstrual disorder patients. 150 female patients with menstrual disorders were randomly divided into two groups; Intervention group (*Yoga Nidra* intervention and medication) and control group (n=75 in each group). There was significant improvement in pain symptoms (P<0.006), gastrointestinal symptoms (P<0.04), cardiovascular symptoms (P<0.02) and urogenital symptoms (P<0.005) after 6 months of *Yoga Nidra* therapy in intervention group in comparison to control group. The results indicate that somatoform symptoms in patients with menstrual disorder can be decreased by learning and applying *Yoga Nidra* intervention.

The practice of *Yoga Nidra* helps in building up the coping abilities and prevents the person from becoming a victim of distress as stated by Flak (1978) and Gupta (2007) which report that a minimum of 15 sessions of these techniques for 20 to 30 minutes each is extremely effective in reduction of stress.

Rani, Kumar, and Sharma (2013) have undergone a study to see the effect of *Yoga Nidra* on stress level. They exposed 50 B.Sc. nursing first year students and to the *Yoga Nidra* for 20 consecutive days except Sunday. The duration of each session of *Yoga Nidra* was 48 minutes. Modified stress assessment scale originally prepared
by M. Singh was used to assess stress. The study finding reveals that the effect of *Yoga Nidra* on stress level of nursing students is positive at 0.05 level.

Similarly Kumar (2004) conducted a study on post graduate students. The mean stress scores after *Yoga Nidra* were significantly lower than the stress scores before *Yoga Nidra* of post graduate students.

Self-Concept including Physical, Moral, Ethical, Personal, Familial, Social, and Self-Criticism can be corrected and Strengthen by the practice of *Yoga Nidra* (Pradhan, 2013).

*Yoga Nidra* is a tool of total relaxation. It is a successful therapy for both recent and long standing psychological disturbances of all kinds, especially high anxiety levels (Girodo, n.d.; Baither and Godsey, n.d.) The practice of Yogic relaxation has been found to effectively reduce tension and improve psychological well-being of sufferers from anxiety. The study by Pandya and Kumar (2007) states that, *Yoga Nidra* is able to improve the immunity of the practitioner and it is considered highly effective practice as it increases significantly the level of hemoglobin as well as TCL level of the students at higher classes.

Mueller, Wilson, and Raynes, (2012) investigated the impact of iRest-Integrative Restoration (*Yoga Nidra*) on perceived stress, worry, anxiety, depression and mindfulness of college students. *Yoga Nidra* Programme is a 10 stage protocol designed to teach deep relaxation and meditative self-inquiry. The iRest class was conducted for 1.5 hours per session per week during an eight week period. Pre and post assessments were administered and qualitative feedback were collected at week 4 and 8. Statistical significant reductions were noted in perceived stress, worry, depression and three out of five factors of mindfulness. State and trait anxiety were not found to be statistically significant.

Rani, et al. (2012) states, emotional insecurity, stress, depressive or/and anxiety symptoms are common with variable severity among patients with menstrual disorder. They have studied *Yoga Nidra* as a complementary treatment of anxiety and depressive symptoms in patients with menstrual disorder. Assessments of all subjects were carried out by administering Hamilton anxiety scale (HAM-A) and Hamilton rating scale for depression (HAM-D) at baseline and after six months. There was significant reduction of scores in HAM-A (P<0.003) and HAM-D (P<0.02)
respectively in subjects with mild to moderate anxiety and depressive symptoms after six months of yoga therapy (Yoga Nidra) in intervention group in comparison to control group. It was concluded from the study that the patients with mild to moderate anxiety and depressive symptoms improve significantly with ‘Yoga Nidra’ intervention. There is no significant improvement in the patients with severe anxiety and depressive symptoms.

Khushabu, et al. (2012), they observed significant improvement in the anxiety level of 75 women of age between 18 to 45 years having menstrual irregularities after 6 months Yoga Nidra programme developed by Swami Satyananda Saraswati. Another controlled study (Lekh, 1979) which was conducted at the Langley Porteer, Neuropsychiatry Institute in California found that reduction in blood pressure and anxiety levels in hypertensive patients after 12 months of Yoga Nidra training.

In a study, authors studied the association of menstrual symptoms with anxiety and depression in a sample of 82 first-year female medical students. Nearly, half the subjects reported the frequent occurrence of at least one menstrual symptom that appeared to cause discomfort but did not interfere with performance (Sherry, et al. 1988). Yoga Nidra has been reported to relieve pain associated with dysmenorrhea and excessive levels of premenstrual tension (Ferguson, 1981).

Kumar (2005) studied the effect of yoga nidra on hypertension and other psychological co-relates. The study conducted at Patliputra Seva Sansthan Patna City, Patna. Practice time was 30 minutes and the duration was fifteen days. Forty people suffering with mild hypertension (30 males and 10 females) were taken for the study. Where the males were businessmen and females were house wives. The result shows a significant change as yoga nidra positively decrease the blood pressure (both systolic and diastolic) as well as pulse rate, respiration rate, stress, anger and fear.

Kumar (2006), has studied the psycho-physiological changes related to Yoga Nidra. He applied Swami Satyananda Saraswati’s Yoga Nidra technique in six phases which are Preparation, Sankalpa, Body part awareness, Breath awareness, Feeling and Sensation, Visualization and Ending of the practice. He found positive and significant results of Yoga Nidra on various psycho-physiological variables of 20-30 years P.G. students. He claims Yoga Nidra helps to decrease pulse rate, respiration rate, blood
pressure, increase level of hemoglobin, positively affects general well being, memory, decreases stress, anxiety, guilt, aggression, fatigue.

Kumar (2012) has investigated deeply the impact of Yoga Nidra on ESR (Erythrocyte Sedimentation Rate) level. ESR is a simple laboratory test that measures the distance that erythrocytes have fallen after one hour in a vertical column of anticoagulated blood under the influence of gravity. Generally faster the blood cells fall, the more severe the inflammation. Sedimentation rate increases in inflammation, infection, cancer, rheumatic diseases of the blood and bone marrow. The Yoga Nidra programme of 30 minutes was given to 80 healthy students for 6 months while 30 students were kept in controlled condition. The study showed a significant change at 0.01 level on the ESR level of the normal persons as a result of Yoga Nidra Practice. It is concluded from the study that, Yoga Nidra positively decreases the level of ESR (which correlates high immunity) in the male and female.

**Concluding Remark:**

Researcher has reviewed literature and summarizes here. These references focus on the history and origin of Yoga Nidra, the health benefits of it for human being, impact of Yoga Nidra on physiological variable menstruation. Researcher also got the scientific relevance of Yoga Nidra with dependent variables of the study.

### 2.1.7 Surya Namaskar, Yoga Nidra and psychological problems of adolescent girls:

The practice of this type of yogic relaxation has been found to reduce tension and anxiety. Relaxation can reduce anxiety. Many studies have proved that yoga and meditation are beneficial in cases of psychiatric and psychosomatic disorder like stress, aggression, anxiety, depression, mental retardation, hyper tension, diabetes, etc (Mark Nesti, 2004). Yogic practice has the significant reduction of total anxiety (Kocher, 1972).

Fear and anxiety response are provided by the action of body’s autonomic nervous system (ANS) expanded network of nerve fibers that associates the central nervous system (CNS) (Susic, 2013). The ANS helps control the involuntary activities. When one faced with stressors, the ANS triggers the adrenal gland allocated on the top of the kidney into action and these glands release a group of hormones
called corticosteroids. These corticosteroids, in turn, stimulates various body organs and certain region of the brain setting in motion anxiety actions (Carson, Butcher and Mineka, 2000). According to the findings of the Gawali and Dhule, 2013; Mullur, et al., 2012, yogic practices balances autonomic nervous system with a tendency towards parasympathetic nervous system dominance. Swami Satyanand Saraswati, (1998) revealed that during anxiety there is an increased response of the hypothalamus and sympathetic activity. The Yoga Nidra state appears to reflect an integrated response by the hypothalamus, resulting in decreased sympathetic (excitation) nervous activity and increased parasympathetic (relaxation) function (Swami Satyanand Saraswati, 1998). Surya Namaskar tones up the nervous system by stretching and bending the spinal column as well as regulates the sympathetic and parasympathetic nervous systems (Naik, 2013). Surya Namaskar reduces depression, anxiety and stress by reducing key markers like Cortical. As well as it increases the quantity of ‘good mood’ nuerotransmitters like Serotonin (Naik, 2013).

Amutha (2010) conducted a study on the effect of selected Yoga Programme on Anxiety, VO₂max and Flexibility and the result shown the significant improvement. Susan Lark (1993) said that practicing Yoga will “provide effective relief of anxiety and stress. Hatha yoga could be a helpful adjunct to medical and psychological treatment when practiced regularly by clients on their own to improve feelings of physical health, reduce their anxiety and enhance their self-concepts and emotional tone.”

Sarojini (2014) has studied influence of yoga practice on anxiety level of 50 apparently healthy female subjects of age between 20 to 50 years. The subjects attended the four weeks yoga camp. The researcher found significant reduction in the severity of anxiety and improvement in subjective feeling of well being.

Rajpoot and Vaishnav (2014) have seen the effect of Trataka on anxiety among adolescents. Trataka is a fundamental concentration method in both yogic and Trantrik regimens. To achieve the aim of the study, researchers selected a sample of 30 adolescent students from Haridwar. Selected samples received daily 20 minutes Jyoti Trataka Practice for one month. The anxiety of students was measured by Sinha’s Comprehensive Anxiety test. Findings of the study reveals that, trataka significantly decreases anxiety level among students at 0.01 level.
Concluding Remark:

Researcher has reviewed above literature and summarizes here. These impact
of Yoga Nidra and Surya Namaskar on psychological variables- anxiety and self-
concept. Researcher also got the scientific relevance of Yoga Nidra and Surya
Namaskar with dependent variables of the study.

2.2 Research Gap:

After thoroughly reviewing the previous research work researcher found that,
there are much work done on menstrual problems and disorders among women. There
are studies in which only physical disorders or only psychological disorders were
studied. Here in the present study, researcher deals with both the variables (physical
and psychological) together. The studies in which effect of only Surya Namaskar
practice observed are very little. In the present study, researcher carried out
experimentation of both Surya Namaskar and Yoga Nidra practice on girls in early
adolescent years (age between 12-15 years) and compare the results of both the
programmes. The research work undertaken is new and different from other studies.
References


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