

DISSERTATION ON
THE EFFECT OF SCHOOL BASED HEALTH EDUCATION
REGARDING MENSTRUAL HYGIENE - AN INTERVENTION STUDY
AMONG ADOLESCENT GIRLS OF PERAMBALUR DISTRICT

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May - 2018

CERTIFICATE

This is to certify that this dissertation titled “**THE EFFECT OF SCHOOL BASED HEALTH EDUCATION REGARDING MENSTRUAL HYGIENE - AN INTERVENTION STUDY AMONG ADOLESCENT GIRLS OF PERAMBALUR DISTRICT**” is a bonafide research work of **DR.K.LOGESWARI** in partial fulfillment for the requirements for M.D Branch - XV (COMMUNITY MEDICINE) Examination of the Tamil Nadu Dr. M.G.R Medical University to be held in APRIL -2018. This is a bonafide research work carried out by her under our direct supervision and guidance. The period of study was from 2015 – 2018.

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DECLARATION

I, **Dr. K. LOGESWARI** solemnly declare that the dissertation title “**THE EFFECT OF SCHOOL BASED HEALTH EDUCATION REGARDING MENSTRUAL HYGIENE - AN INTERVENTION STUDY AMONG ADOLESCENT GIRLS OF PERAMBALUR DISTRICT**” was done by me at Dhanalakshmi Srinivasan Medical College and Hospital, Perambalur, under the , supervision and guidance of **Dr. JERAM P, M.D.** This dissertation is submitted to The Tamil Nadu Dr. M.G.R Medical University, towards the partial fulfillment of requirement for the award of M.D. Degree (Branch –VI) in Pharmacology.

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CERTIFICATE - II

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ABSTRACT

TITLE OF THE STUDY:

**The Effect of School Based Health Education regarding Menstrual Hygiene
- An Intervention Study among Adolescent Girls of Perambalur District.**

BACKGROUND & INTRODUCTION:

Adolescence is a transition period from childhood to adult life. During this period, pubertal development and sexual maturation take place. There is a substantial lacuna in the knowledge towards menstruation and menstrual hygiene among adolescent girls. Adolescent girls are often reluctant to discuss this topic with their parents, friends or anyone. This in turn leads to ignorance of the scientific facts and hygienic health practices among adolescent girls. Better knowledge and safe menstrual practices will avoid risk against reproductive tract infections and its consequences. With this scenario, it would be appropriate to give educational intervention to girls at school level itself. Therefore, increased knowledge about menstruation right from childhood may escalate safe practices and may help in mitigating the suffering of millions of women.

AIMS & OBJECTIVES:

- 1) To assess the effects of health education on knowledge, attitudes and practices regarding menstrual hygiene among study population.
- 2) To compare the relative effects of Peer led intervention and Direct intervention among the study population

METHODOLOGY:

An intervention study was conducted from June 2015 to October 2017. A sample size of 486 was calculated based on previous studies and was selected by cluster random sampling. A total of nine schools were selected and randomly allocated into three groups Peer-led intervention, Direct intervention and control group. A Pre-tested, Semi structured Questionnaire was used for pre and post-test. Intervention sessions were given for three months. Data was analyzed using SPSS version 16.

RESULTS:

The pre-test results were similar among all three groups. While comparing the results of pre and post-test, it was found that both Peer-led and Direct intervention group showed increase in knowledge and practice scores compared to control group and it was statistically significant ($p < 0.05$). Direct intervention showed relatively better scores than Peer-led group.

CONCLUSION:

The study has highlighted that intervention in the form of Health education can significantly improve knowledge and Menstrual Hygienic practices among adolescent girls. It is important to have this health education at early stages of reproductive life to mitigate the sufferings of womenfolk.

KEY WORDS: Menstruation, Menstrual Hygiene, Peer-led intervention.

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ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ANM	Auxiliary Nurse Midwifery
ANOVA	Analysis of Variance
AOR	Adjusted Odds Ratio
ARSH	Adolescent Reproductive and Sexual Health
ASHA	Accredited Social Health Activists
BCC	Behavior Change Communication
DHFS	District Level Household Survey
FGD	Focus Group Discussions
HIV	Human Immunodeficiency Virus
HSD	Honest Significant Difference test
IEC	Information Education and Communication
IPC	Inter Personal Communication
LMIC	Low and Middle Income Countries
MHM	Menstrual Hygiene Management
NFHS	National Family Health Survey
NRHM	National Rural Health Mission
PCI	Per Capita Income
RCH	Reproductive and Child Health
RTI	Reproductive Tract Infection
SHG	Self Help Group
UNICEF	United Nations Children's Fund
WASH	Water Sanitation and Hygiene
WHO	World Health Organization

TITLE OF THE STUDY- THE EFFECT OF SCHOOL BASED HEALTH EDUCATION REGARDING MENSTRUAL HYGIENE - AN INTERVENTION STUDY AMONG ADOLESCENT GIRLS OF PERAMBALUR DISTRICT

1 INTRODUCTION

The World Health Organization defines adolescents as young people between the ages of 10 and 19 years. Adolescent population constitutes about 16% of world's total population¹. Adolescence is a transition period from childhood to adult life. Adolescence is an important and sensitive phase of life. Many physical, mental and social developments take place during this phase.²

For a girl, adolescence is a period of rapid transition to womanhood. The onset of menstruation is one of the most important changes that occur for girls during the adolescent years.³ Menstruation occurs periodically throughout the child bearing years, except during pregnancy and lactation. It commences with menarche and ends with menopause. Throughout this period it is important for women to understand the changes that happen with menstruation. Even though menstruation is a physiological process; it is linked with several misconceptions and malpractices which may result in adverse health outcomes. Menstruation and menstrual hygiene related practices are still clouded by taboos and socio-cultural restrictions². Poor hygiene during menstruation has been associated with serious ill-health, including reproductive tract and urinary tract infections.

There is a substantial lacuna in the knowledge towards menstruation and menstrual hygiene among adolescent girls.

Menstruation is generally considered as unclean in Indian society. Isolation of the menstruating girls and restrictions imposed on them in the family have reinforced negative attitude in girls. Several studies have reported restrictions in daily activities, seclusion, restrictions to play, go to school and enter holy places are still practiced. Apart from these, dietary restrictions during menstrual period are also imposed.

Adolescent girls are often reluctant to discuss this topic with their parents, friends or anyone. They remain hesitant to seek help regarding their menstrual problems. This in turn leads to ignorance of the scientific facts and hygienic health practices among adolescent girls³. Menstrual disorders are found to be the commonest gynecological problem in teenagers, affecting their future reproductive health if ignored. They are also at risk of many diseases due to poor sanitation, unclean water and lack of personal hygiene.

Hygiene-related practices of women during menstruation are of considerable importance, as it has a health impact in terms of increased vulnerability to reproductive tract infections (RTI) ⁴. The interplay of socioeconomic status, menstrual hygiene practices, and RTI are noticeable. Today millions of women are sufferers of RTI and its complications and often the infection is transmitted to the offspring of the pregnant mother. RTIs which have become a silent epidemic that devastate women's life are

closely interrelated to poor menstrual hygiene. The use of rags and old clothes is a rule rather than exception in rural areas of India. Unclean rags and old clothes increase the chances of RTIs including urinary, vaginal, and perineal infection. Very often, serious infections are left untreated and may sometimes lead to potentially fatal toxic shock syndrome. Untreated RTIs are responsible for 10-15% of fetal wastage and 30-50% of prenatal infection. Increasingly, RTIs are also linked with the incidence of cervical cancer, HIV/AIDS, infertility, ectopic pregnancy, and a myriad of other symptoms.⁵

Proper menstrual hygiene, correct perception and belief will protect women folk from this suffering⁴. Majority of women acquire knowledge regarding menstruation and menstrual hygiene through their parents, friends and relatives. Only few acquire correct knowledge either through teachers or health personnel. Learning about menstrual hygiene is a vital part of health education for adolescent girls so that they can continue to work and maintain hygienic habits throughout their adult life. Better knowledge and safe menstrual practices will avoid risk against reproductive tract infections and its consequences. The ideal menstrual health education curriculum would encourage students to think about the relationships between knowledge, choice, behaviours and enhanced human health. It would also help to improve maternal health.

2 AIMS AND OBJECTIVES

- To assess the effects of health education on knowledge, attitudes and practices regarding menstrual hygiene among study population.
- To compare the relative effects of Peer led intervention and Direct intervention among the study population

3 REVIEW OF LITERATURE

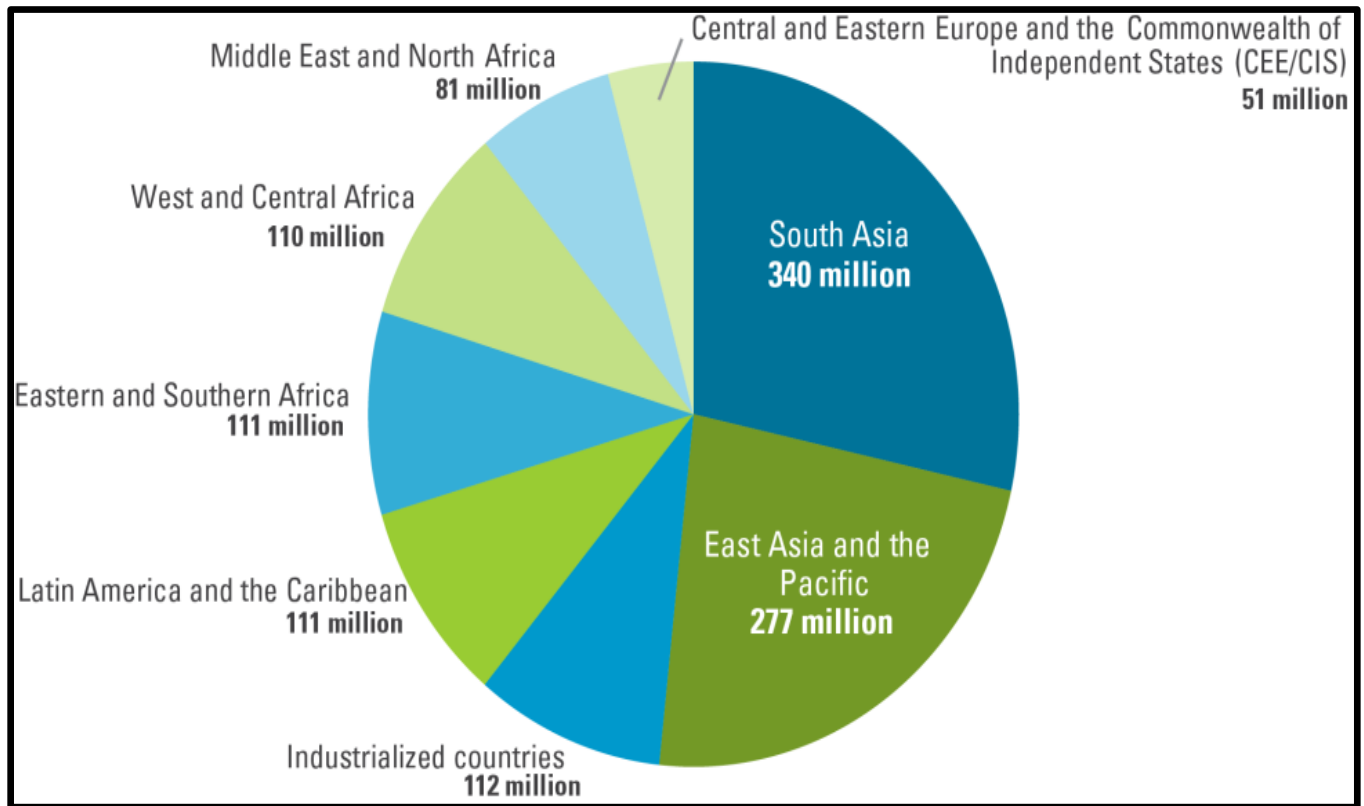
3.1 INTRODUCTION:

A vast majority of adolescent girls in India are suffering from reproductive health morbidities which may affect normal life of adolescent and young adult women. Physical, mental, social, psychological and reproductive problems are often associated with menstrual irregularities and menstrual problems. The literature available in India and abroad mainly highlights the problems faced during menstruation among adolescent girls residing in rural and urban establishments. During adolescence period, girls first experience menstruation and related problems, which is marked by feelings of anxiety and eagerness to know about this natural phenomenon. Traditional Indian society regards talks on such topics as taboo and discourages open discussion on such issues.

3.2 ADOLESCENCE:

The World Health Organization defines adolescents as young people between the ages of 10 and 19 years¹. Adolescence is a transition period from childhood to adult life. Adolescents are a major and most developing building block of the world's population.¹ Some 1.2 billion adolescents aged 10-19 years today make up 16 per cent of the world's population. More than half of all adolescents globally live in Asia. In absolute numbers, South Asia is home to more adolescents – around 340 million – than any other region. It is followed by East Asia and the Pacific with around 277 million.

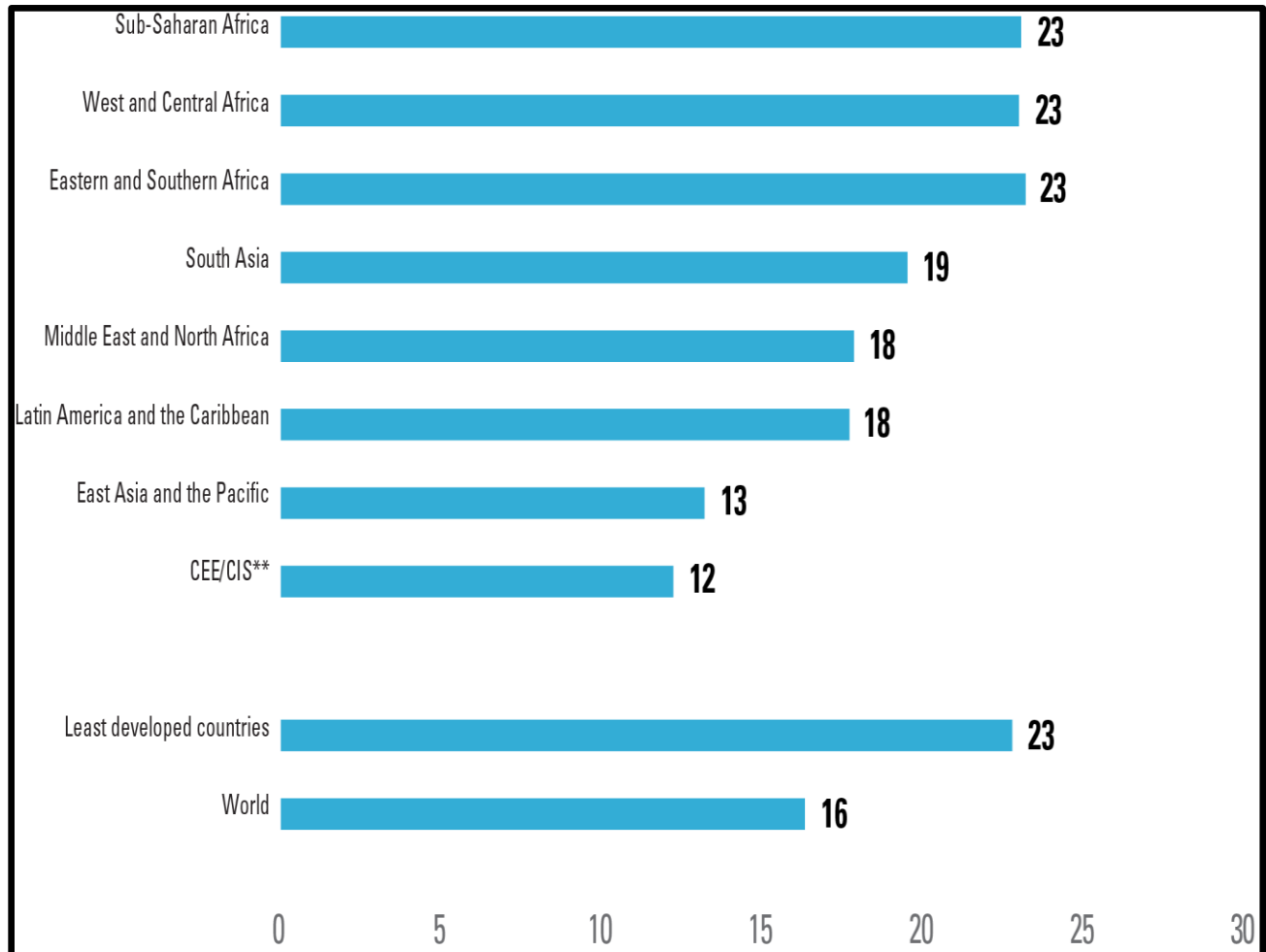
Figure 1: Population of Adolescents aged 10-19 years, by region



India has the largest population of adolescents in the world, being home to 253 million adolescents, constituting 20% of Indian population, according to 2011 census. Also, it constitutes 20% of the world's 1.2 billion adolescents.² In addition, more than 1 in 10 children in India are teenagers or currently experiencing puberty, and more than a quarter of all children will transition to adolescence and puberty within the next decade.⁴

5, 6

Figure 2: Population of Adolescents aged 10-19 years as a proportion of the total population, by region



It is evident from Figure 2 that the Adolescents constitute 16% of world's total population.

3.3 MENSTRUATION & MENSTRUAL CYCLE:

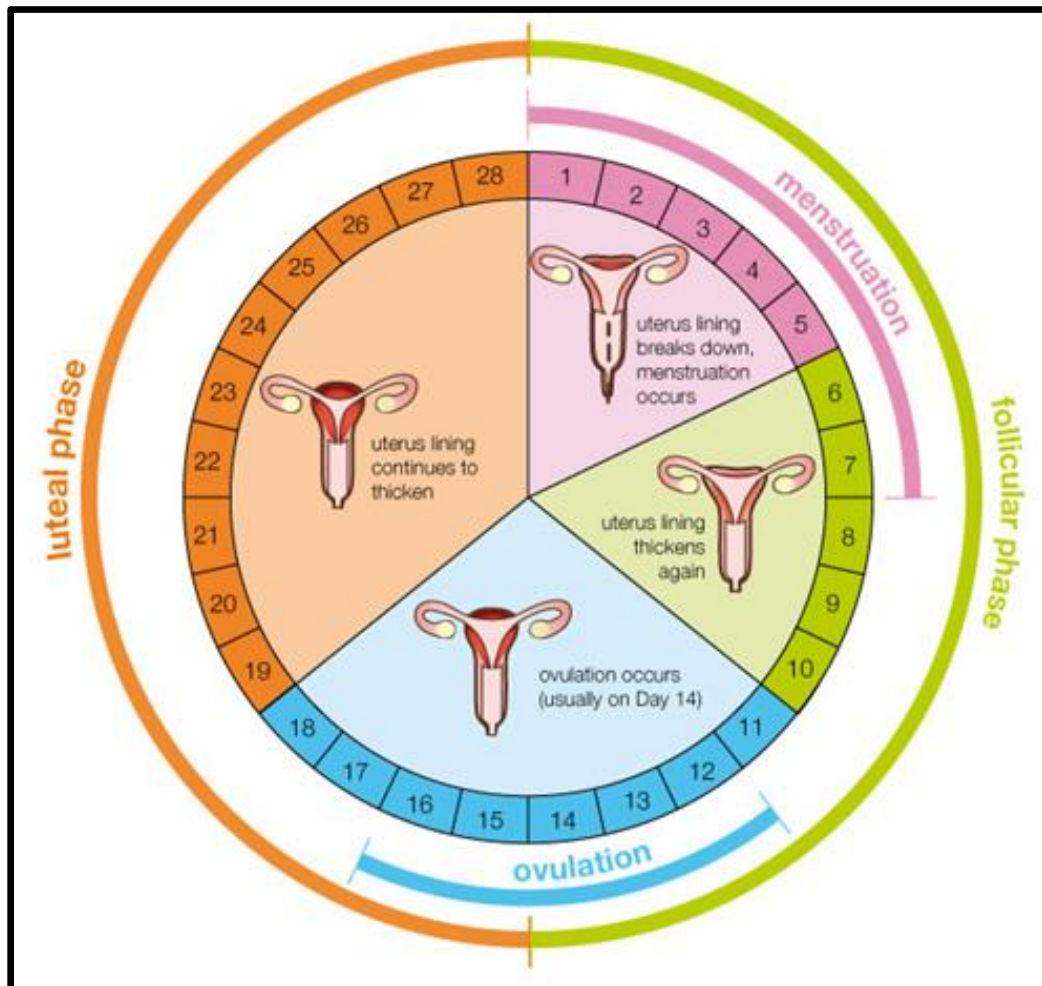
Menstruation is unique to females and is part of the female reproductive cycle that starts at puberty.⁷ Menstruation is the normal and physiological process of the discharge

of blood from the uterus which is unique to females that begins in adolescence. The first menses is called “Menarche”. The first menstruation (menarche) occurs between the ages of 11 and 15⁸. During menarche, girls experience different feelings including fear, shame and guilt because of lack of prior information about menstruation.⁹

With onset of menstruation a girl becomes aware of her emerging identity as a female capable to reproduce. Her understanding and acceptance of her new identity will be greatly influenced by the feedback she receives from peers, educators and most importantly her parents.¹⁰ Menstruation occurs periodically throughout the child bearing years, except during pregnancy and lactation. The ages of onset of menstruation differ from person to person but seem to be affected by heredity, racial background and nutritional status.^{11, 12}

Menstruation is the cyclical shedding of the inner lining of the uterus, the endometrium, under the control of hormones of the hypothalamopituitary axis. It is monthly bleeding for 3-5 days occurring regularly every 28 days from puberty till menopause in the women’s reproductive life.

Figure 3: Various Phases of Menstrual cycle



Menstrual cycle has various phases such as Menstrual, Pre-ovulatory (follicular), ovulation and luteal phase. It is depicted in above Figure 3. Menstrual cycle starts at the age of 13-15 years which marks the onset of puberty. Menstrual cycle ceases at the age of 45-50 years. A woman spends approximately 2100 days in menstruating that is almost 6 years of her life.¹³

3.4 MENARCHE:

Menarche is the signal that sexual maturation of the young female has occurred and that the body is capable of supporting pregnancy.¹⁰ Menarche is the first menstrual period occurs during the period of adolescence and it is a physiological and developmental phenomenon significant in the life of a female. It occurs between the ages of 10 to 16 years with the average age in India being about 12 years. It occurs earlier than it once did in many parts of the world. The age at menarche shows many socio-economic, environmental, nutritional and geographical differences in the societies. During this phase of growth, the girls first experience menstruation and related problems which is marked by feeling of anxiety and eagerness to know about this natural phenomenon.

3.5 MENSTRUATION HYGIENE MANAGEMENT (MHM):

Menstrual hygiene deals with the special health care needs and requirements of women during monthly menstruation or menstrual cycle. Menstruation Hygiene Management (MHM) focuses on practical strategies for coping with monthly periods. MHM refers to ways women themselves keep clean and healthy during menstruation and how they acquire, use and dispose of blood-absorbing materials¹⁴. Menstrual hygiene management (MHM) is a problem for adolescent girls in low and middle income countries (LMICs), when attending school.¹⁵

United Nations defines adequate menstrual hygiene management as “women and adolescent girls using a clean menstrual management material to absorb or collect blood

that can be changed in privacy as often as necessary for the duration of the menstruation period, using soap and water for washing the body as required, and having access to facilities to dispose of used menstrual management materials.” Particularly in poor countries, girls and women face substantial barriers to achieving adequate menstrual management.¹⁶

3.6 POOR MENSTRUAL HYGIENE:

Even today’s modern world, physiology and nature of menstruation are very poorly understood among the female population due to many socio-cultural factors which make them to adapt certain practices unknowingly whether it is correct or false. All women, whether rural or urban, irrespective of their socioeconomic status have their own beliefs and practices concerning menstrual hygiene¹⁷.

In many areas of developing countries, a culture of silence surrounds the topic of menstruation and related issues. As a result, many young girls lack appropriate information on menstrual hygiene. Infections due to lack of hygiene during menstruation have been reported in many studies. They also revealed that most adolescent girls had incomplete and inaccurate information about menstrual physiology and hygiene. The menstrual information they did have was acquired primarily through mothers, television, friends, teachers and relatives.³

The mothers also lack sufficient knowledge and the skill to communicate to their daughters regarding menstruation and its hygiene. This has openly blocked the access of

information to the adolescence. In addition, many myths regarding menstrual hygiene prevails in our society which adds to the lack of proper knowledge, attitude and practice about menstruation. Faulty perceptions or misconceptions on menstruation and menstrual cycle will lead to faulty menstrual practices. Either of these may engender reproductive health problems in the adolescent.¹⁷

Poor menstrual hygiene and inadequate self-care are major determinants of morbidity and other complications among this age group. Some of these problems include urinary tract infections (UTI), scabies in the vaginal area, abnormal abdominal pain, absence from school, and complications during pregnancy.^{18, 19, 20, 21}

3.7 MENSTRUAL HYGIENE MANAGEMENT FRAMEWORK IN INDIA:

Menstrual hygiene management is an integral part of the Swachh Bharat Mission Guidelines (SBM-G). The Menstrual Hygiene Management Guideline is issued by the Ministry of Drinking Water and Sanitation to support all adolescent girls and women. It outlines what needs to be done by state governments, district administrations, engineers and technical experts in line departments; school head teachers and teachers.

In considering the specific sanitation and hygiene requirements of adolescent girls and women, state governments and district administrations have a responsibility for putting in place the menstrual hygiene management. The framework highlights the essential elements of a menstrual hygiene management programme that should be integrated in to other government schemes.¹⁸

3.8 ROLE OF SOCIAL TABOOS:

A culture of silence surrounds the topic of menstruation and related issues; as a result many young girls lack appropriate and sufficient information regarding menstrual hygiene.^{17, 22} It is well-known that cultural factors are deeply involved in all the affairs of man and women. Some of these cultural factors, followed years together without any scientific background and for which they have their own explanation in relation to their cultural practices. These socio-cultural factors like myths and taboos concerning menstruation and health and disease were explored by many studies.^{23, 24}

When a girl attains puberty, significance is attached to the day of the coming of age. It is the custom to consult a book of omens. The month, the day and the time are noted. If it happens to be a Monday, the girl will be eminently chaste. Tuesday is not favorable, as she is likely to be a widow early in her days of wedlock. If it is Wednesday, she will be wealthy. Thursday is good, too, for she bids fair to be virtuous. Friday is not considered auspicious. Saturday and Sundays are also bad days as she runs the risk of being poor. The time, too, has its meaning. Morning is best. After mid-day, it is not so good. If she happens to wear a white cloth it is lucky and if it is red cloth, it is considered as unlucky. If the girl herself first sees the marks, it is considered to be unlucky. These customs seem to be a reflection of the South Indian tradition.²⁵

The importance of this phenomenon is not only the physiological but also social and religious significant is attached to it. Restrictions such as prohibition from religious

activities, attending functions, cooking etc. limits the daily activities and routines of women which is widely practiced in India. Most girls are ignorant about the physiology of menstruation and therefore the first experience of menstruation is of fear, shame and disgust. A fear is deep-rooted in adolescent girls that they will sin if they break these taboos. Due to these reasons girl's attitude and expectations about menstruation has become negative which in turn results in poor menstrual hygiene which is associated with high prevalence of Reproductive Tract Infections (RTIs).¹³

3.9 RESTRICTIONS DURING MENSTRUATION

Restrictions in daily activities such as not being allowed to take bath, change clothes, comb hair and enter holy places and dietary restrictions (taboo on consumption of food like rice, curd, milk, lassi, potato, onion, sugarcane etc.) during the menstrual period are also imposed.²⁶

In Hindu culture, certain taboos are usually followed. Though some taboos seem to be superstitious, they are useful to maintain menstrual hygiene. For example, once menstruation began she is isolated from participating in day to day activities. Starting from taking bath soon after she wakes up from sleep, using separate place and mat for sleep. It should be washed every day morning along with the cloths she used. Some taboos being followed are “She shouldn't go to Pooja room”, “She should use separate vessels, mat, pillow and wash things every day morning during menstruation; sleep alone on empty floor; shouldn't throw out her dress with blood stain; should not allow the dog

to eat the food remaining after her eating; shouldn't see men and touch flowers before bath. In Hindu religion, menstruation is considered religiously impure and ceremonially unclean, but no scientific reason has been given. One could expect that the practice of such taboos is likely to be more in rural areas as compared to urban areas. Such practices are also observed in other religious communities.²

3.10 PRE-MENSTRUAL SYMPTOMS:

Most of the females suffer from the pre-menstrual symptoms (pre-menstrual symptoms occur between ovulation and start of menstrual bleeding), and they may vary greatly from cycle to cycle and be worse during times of increased stress. Common physical symptoms are Fatigue, Headache, Back pain, Breast tenderness, Constipation and Mood and Behavior symptoms like Sad or Depressed mood, Anger irritability, Anxiety, Mood swings etc. Average blood flow during menstruation is 80-90 ml per cycle.²⁶

3.11 ROLE OF TOILETS:

Currently, there are 2.4 billion people worldwide who do not use improved sanitation (a facility that safely separates human waste from human contact). 946 million people go in the open, known as "open defecation", which means toileting in fields, roadsides or by train tracks. 5 countries, India, Indonesia, Nigeria, Ethiopia, Pakistan, account for 75% of open defecation.

Recent reports have shown that in India, 597 million people, or 48 per cent of the total population, practice open defecation. Although open defecation has been reduced by 31 % since 1990, about 300 million women and girls in India still have no other choice.²⁷ While open defecation is more prevalent in rural areas, it is much more concentrated in urban areas, particularly in urban poor settlements where residents live in close quarters and sanitation facilities are severely lacking. In rural areas, underground sewers are almost nonexistent; urban areas are only marginally better.

A recent report shows that only 6% of India's cities have partial sewerage network, fewer than 20% of roads have storm water drains, and 86% of waste water is left untreated and often ends up polluting natural resources and highly populated urban environments. In a study conducted by Anupama Nallari, poor adolescent girls in urban Bengaluru say, "All we want are toilets inside our homes!"²⁸. Lack of latrine, water supply seriously affects menstrual hygiene management and jeopardizes physical, psychological health of school adolescents.

A recent survey found that a fifth of schools surveyed in India had no separate toilets for girls. Among schools having separate girls' toilets, 13.6 per cent were locked, 13.9 per cent of accessible toilets were not in a condition to be used, and only a little over half of the schools had usable, unlocked toilets. The HRD Ministry figures in the report that pertains to schools run by various States point out that of the 37,002 government schools in Tamil Nadu, as many as 1,442 girls' schools and 4,278 boys' schools are without toilets. In the other category, as many as 958 girls' schools and 1,159 boys'

schools have only ‘dysfunctional’ toilets. In sum, for all practical purposes, 7,837 schools in Tamil Nadu go without toilets. The district-wise findings for Tamil Nadu show that the numbers of schools without toilets are above 100 in 16 districts, while in 13 other districts, the numbers are below 100 in each.²⁹ When schools lacked toilets, girls were less likely than boys to relieve themselves outside the school premises, and were more likely to go home.³⁰

3.12 WATER, SANITATION AND HYGIENE (WASH) SCHEME:

The Global Goals have set an ambitious new agenda for sustainable development. The new goal for the water sector, Goal 6, aims to achieve universal, sustainable and equitable access to safe drinking water, sanitation and hygiene by 2030. In response to the global goals, UNICEF has developed a new Strategy for Water, Sanitation and Hygiene (WASH) 2016-2030 that provides a framework to guide our work related to water, sanitation and hygiene over the next 15 years.²⁷

WASH facility in schools are important considerations for school-going girls, both for their educational attainment and their health.²⁹ Qualitative studies report that school absenteeism is associated with poor MHM interventions, but so far only WASH studies have shown an association between toilet improvement and absenteeism, and improved enrolment of adolescent girls when girls-only toilets were constructed.¹⁵ India, has an array of policies and schemes developed to provide pads, counselling from frontline

workers, and the construction of toilets for girls also number of separate usable toilet facilities for girls has increased in India.¹⁵

3.13 SANITARY NAPKINS:

Absorbent pads used to manage menstrual blood loss are an important need of adolescent girls. Though sanitary pads are used universally in high income countries, large study in India showed that only 12% of menstruating women used sanitary pads, 70% of women cited cost as major barrier in using them.³¹

A study conducted in Ethiopia showed most (92%) students were aware of menstruation before menarche, their utilization of sanitary napkins was low at 37.6% and a significant proportion, 62.4% were using rags whereas Urban–rural disparity in access to sanitary napkins was 37.1% of urban girls and only 1.6% of rural girls used this product due to access and financial constraints.³²

3.14 GOVERNMENT INITIATIVES:

Freedays scheme envisaged supplying a pack of six sanitary napkins to Below Poverty Line girls at nominal cost of Re.1 per pack. All girls in the Above Poverty Line category will be charged Rs. 5 per pack of sanitary napkins (or the final determined cost in the state). This was approved by the Mission Steering Group of the National Rural Health Mission (NRHM) chaired by the then Union Minister of Health and Family Welfare Mr. Ghulam Nabi Azad.³³

In a bid to better the health of adolescent girls, and ensure reproductive health of women, the state government of Tamilnadu has launched a ‘napkin revolution’ all over the state. That Free sanitary napkins are distributed to rural girls, new mothers and girls studying in government schools.¹⁷

3.15 SCHEME FOR PROMOTION OF MENSTRUAL HYGIENE:

This scheme aims at ensuring that adolescent girls to have adequate knowledge and information about menstrual hygiene, use of sanitary napkins of high quality, safe products are made available to them, and environmentally safe disposal mechanisms are readily accessible. The scheme has been launched as part of the Adolescent Reproductive and Sexual Health (ARSH) component under RCH II (launched on April 2005). In the first phase, the scheme was expected to cover approximately 25% of the country’s adolescent girl population (aged 10 to 19 years), i.e., 1.5 crore girls in 152 districts across 20 States.

Out of these, supply of sanitary napkins in 107 districts was envisaged initially in a Central supply mode, wherein sanitary napkins were to be supplied by the Government of India. The supply of sanitary napkins in the remaining 45 districts was envisaged in a Self Help Group (SHG) mode, wherein SHGs were to manufacture the sanitary napkins that are to be sold to adolescent girls. Procurement of sanitary napkins, whether through Central supply by the Government of India, or through SHGs, has to be done at a fixed price of Rs. 7.50/- per pack of six sanitary napkins. Sanitary napkins are provided under

NHM's brand, 'Freedays'. These napkins are being sold to adolescent girls at the rate of Rs. 6 per pack of six napkins by Accredited Social Health Activists (ASHAs). From out of sale proceeds, the ASHA gets an incentive amount of Re. 1 per pack, besides getting a free pack of sanitary napkins per month and balance Rs 5 is to be deposited in the State/district treasury. This scheme has taken off in 107 districts, 17 States that are being supplied sanitary napkins through Central procurement.³⁴

3.16 ADOLESCENT REPRODUCTIVE AND SEXUAL HEALTH

A vast majority of adolescent girls in India are suffering from reproductive health morbidities which may affect normal life of adolescent and young adult women. Physical, mental, social, psychological and reproductive problems are often associated with menstrual irregularities and menstrual problems. The literature available in India and abroad mainly highlights the reproductive problems among adolescent girls residing in rural and urban establishments. During adolescence period, girls first experience menstruation and related problems, which is marked by feelings of anxiety and eagerness to know about this natural phenomenon. Traditional Indian society regards talks on such topics as taboo and discourages open discussion on such issues.^{34, 35}

The adolescent girls are facing various menstrual health problems like abdominal pain, menorrhagia, polymenorrhoea etc. However, very few of them seek the treatment for the same. These untreated problems are also responsible for loss of schooling days. India is yet to develop a comprehensive policy on Adolescent Reproductive and Sexual

Health (ARSH) mainly due to lack of inter-ministerial collaboration, socio-cultural and politico-religious factors, even though evidence from surveys and non-governmental organization projects has corroborated the case for ARSH since late 1980s. Adolescent health in India is still in an infant stage and at the risk of infanticide. From “health for the adolescents” to “health with the adolescents”, it is still a long way to go.³⁶

3.17 KNOWLEDGE, ATTITUDES REGARDING MENSTRUATION AND MENSTRUAL HYGIENE PRACTICES

3.17.1 Global Studies on Menstruation & Menstrual Hygiene

Haque *et al.*, conducted an Intervention study in Arihazar area, Bangladesh. It is a school-based health education study. Total participants were 416 adolescent female students aged 11–16 years, in grade 6–8, and living with their parents. After health education, participants reported a significant improvement ($p < 0.001$) in ‘high knowledge and beliefs’ scores compared to baseline (51% vs 82.4%). Significant improvement was also observed in overall good menstrual practices (28.8% vs 88.9%), including improvements in using sanitary pads (22.4% change after the intervention), frequency of changing pads/cloths per day (68.8%), drying the used absorbent (77.6%), methods of disposing of the used absorbent (25.5%), and cleaning of genitalia (19.2%). During the follow-up, the participants reported significant improvements in the regularity of their menstrual cycle (94.5% vs 99.5%) and fewer complications during menstruation (78.6% vs 59.6%).³

Tegegne and Sisay conducted a mixed-method research combining quantitative and qualitative methods in Northeast Ethiopia. The quantitative study was conducted among 595 randomly selected adolescent school girls. Nine in-depth interviews; five school-dropout girls and four female teachers, and four focus group discussions among school girls were conducted in 2013. The mean age at menarche was 13.98 (± 1.17) years. About 51% of girls had knowledge about menstruation and its management. Only a third of the girls used sanitary napkins as menstrual absorbent during their last menstruation. Girls from urban areas, had mothers of secondary and above education and, families of higher monthly expenditure had more chance of using sanitary napkins than their counterparts. More than half of the girls reported to have been absent from school during their menstruation period. Those who did not use sanitary napkins were more likely to be absent from school [AOR-95% C.I: 5.37 (3.02 - 9.55)]. Fifty eight percent of girls reported that their school-performance had declined after they had menarche. In addition, the qualitative study indicated that school-dropout was common among girls who experienced teasing and humiliation by classmates when their clothes were stained with blood as they do not use sanitary napkins.⁷

Robyn Boosey et al A self-administered questionnaire was completed by schoolgirls in six government-run primary schools in the Rukungiri district, Uganda. Focus groups were held with girls from each school and semi-structured interviews were conducted with head teachers and female teachers from the participating schools. A toilet assessment was also conducted in each school. One hundred and forty schoolgirls

completed the questionnaire. The girls reported a lack of access to adequate resources, facilities and accurate information to manage their menstrual hygiene effectively at school. They reported that, as a result, during menstruation they often struggle at school or miss school. Eighty-six girls (61.7%) reported missing school each month for menstrual-related reasons (mean 1.64, range 0-10, SD. 1.84).³⁷

Gultie *et al.*, conducted a school based cross sectional study at Amhara Province, Ethiopia. Multistage stage sampling technique was used. The school was first clustered in to grades & sections and then participants were selected by lottery method. A pretested & structured questionnaire was used. In this study, 492 students were included, making a response rate of 100%. Mean age at menarche was 14.16 years. The main sources of information about menstrual hygiene management were teachers for 212 (43.1%). Four hundred forty six (90.7%) respondents had high level knowledge about menstrual hygiene management. Most of the respondents 457 (92.9%) and 475 (96.5%) had access for water and toilet facility respectively. Place of residence (AOR = 1.8, 95%CI: [1.42–1.52]) and educational status of their mothers' (AOR = 95%CI: [1.15–13.95]) were independent predictors of knowledge about menstrual hygiene management.³⁸

3.17.2 Indian Studies on Menstruation & Menstrual Hygiene

Pokhrel *et al.*, designed this study to assess the impact of health education on knowledge, attitude and practice on menstrual hygiene among PUC female students of college located in urban area of Belgaum. The study included all the PUC (arts and

commerce stream) girls who had attained menarche and gave informed consent. Descriptive data were displayed in proportion, percentage and mean. Mc Nemar chi-square test was applied as a test of significance. Significance level was set at 5%. There was a significant improvement in knowledge on nearly all menstruation relevant issues in pre-test compared to post-test. In the pre-test, only 75 (24.8%) girls reported that they wash their genitalia in every visit to toilet whereas in the post-test, significant improvement was observed in their menstrual practice ($p < 0.001$). Similarly, the practice of bathing during menstruation was increased from 39.6% in pre-test to 99.0% in post-test which was found to be statistically significant ($P < 0.001$).¹³

A school-based educational interventional study on adolescent health education was conducted by *Ghongdemath et al.*, in Karnataka district. The participants were girls of 11 to 19 years of age. A pretest and post-test were done along with the health education, concerning adolescent health. There were 1249 girl students enrolled into the study. The knowledge on menstruation and menstrual hygiene improved significantly after health education. By this study, it is seen that their knowledge was poor during pretest and remarkable improvement took place after the educational intervention.²

Barathalakshmi et al., conducted a descriptive cross sectional study was conducted in Chidambaram in 2012 among 435 school going girls of 8th - 12th standards. The results revealed that the mean age of menarche in the study group was 12.9 + 1.2 years. Only 28.2% girls were aware of menstruation before menarche. More than three fourth of the girls were not aware of the cause and the source of bleeding. Only 49.5% girls knew

that practicing good hygiene during menstruation would prevent reproductive tract infections. Sanitary pads were used by 90.5% of the study population. Nine percent girls used old clothes as the absorbents. Satisfactory cleaning of the external genitalia with soap was practiced by only 14.5% girls.¹⁴

Zaidi *et al.*, carried out a descriptive cross sectional study among 150 adolescent school going girls in Thiruporur, India. It was observed that only 18.67% of adolescent girls had knowledge about menstruation before menarche. As high as 67% of them did not know the cause of menstruation where as 23.33% of the girls believed that menstrual bleed comes from the same pathway from which urine comes. Nearly all girls (96.67%) reported sanitary pad usage during the duration of menstruation. Two-third (66%) of the girls were secluded during menstruation and majority (81.3%) were restricted to attend school.¹⁷

Dasgupta *et al.*, conducted a descriptive, cross-sectional study was conducted among 160 adolescent girls of a secondary school situated in the field practice area of Rural Health Unit and Training Center, Singur, West Bengal, with the help of a pre-designed and pre-tested questionnaire. Data were analyzed statistically by simple proportions. Out of 160 respondents, 108 (67.5%) girls were aware about menstruation prior to attainment of menarche. Mother was the first informant regarding menstruation in case of 60 (37.5%) girls. One hundred and thirty-eight (86.25%) girls believed it as a physiological process. Seventy-eight (48.75%) girls knew the use of sanitary pad during menstruation. Regarding practices, only 18 (11.25%) girls used sanitary pads during

menstruation. For cleaning purpose, 156 (97.5%) girls used both soap and water. Regarding restrictions practiced, 136 (85%) girls practiced different restrictions during menstruation.¹⁹

Ramachandra et al., conducted a study to explore the knowledge, practices and sources of information regarding menstruation and hygiene among adolescent girls in Bangalore, India. An epidemiologic cross-sectional study method was carried out among 550 school- going adolescent girls aged 13-16 years. Around 34% participants were aware about menstruation prior to menarche, and mothers were the main source of information among both groups. Overall, 69% of adolescent girls were using sanitary napkins as menstrual absorbent, while 6% were using both cloth and sanitary napkins. Almost half of the rural participants dried the absorbent inside their homes.²⁰

Datta *et al.*, undertook this study to assess and compare knowledge, belief, ideas, source of knowledge and practice of menstrual hygiene between school-going adolescents in an urban and a rural school of West Bengal, India. A Cross-sectional, descriptive study was conducted among adolescent female students of Howrah district of West Bengal, India in the year 2011. The mean age at menarche was 12.1 years among urban and 12.2 years among the rural participants. More than 80% participants had some restrictions imposed during menstruation. Significantly higher number of urban girls had pre-menarchal knowledge on menstruation and used sanitary napkins.²²

Vandhana *et al.*, carried out a study on two hundred adolescent school going girls regarding menstruation and menstrual hygiene with the aim to assess the knowledge of adolescent school going girls regarding menstruation and menstrual hygiene in selected schools of Ambala Haryana. Quantitative research approach with descriptive research design was used in the study. The sample comprised of 200 adolescent school going girls studying in class 8th, 9th and 10th who were selected by Purposive sampling technique from Farooka Khalsa Sr. Sec. School, Bhartiya Public School, D.A.V Public School, Ambala Haryana. The tools used for data collection was structured knowledge questionnaire. The content validity and reliability (0.82) was established. Findings revealed mean knowledge score of adolescent school going girls regarding menstruation and menstrual hygiene was 11.72, median was 11.5 and standard deviation was 3.02. Half (50%) of the subjects have below average knowledge regarding menstruation and menstrual hygiene.²⁶

In a study was performed by Shah *et al.*, addresses menstrual health and hygiene practices among adolescent girls in a rural, tribal region of South Gujarat, India, and their experiences using old cloths, a new soft cloth (falalin) and sanitary pads. Qualitative and quantitative data were collected in a community-based study over six months, with a pre- and post- design, among 164 adolescent girls from eight villages. Questions covered knowledge of menstruation, menstrual practices, quality of life, experience and satisfaction with the different cloths/pads and symptoms of reproductive tract infections. Knowledge regarding changes of puberty, source of menstrual blood and route of urine

and menstrual flow was low. At baseline 90% of girls were using old cloths. At the end of the study, 68% of adolescent girls said their first choice was falalin cloths, while 32% said it was sanitary pads. None of them preferred old cloths. The introduction of falalin cloths improved quality of life significantly ($p < 0.000$) and to a lesser extent also sanitary pads. No significant reduction was observed in self-reported symptoms of reproductive tract infections.³¹

Kansal *et al.*, carried out a Community based Cross sectional in 650 adolescent girls in the field practice area of Rural Health and Training Centre, Chiraigaon block of district Varanasi. Out of the total 650 respondents, 590 (90.78%) had attained menarche at the time of interview and only one third of the respondents (29.4%) were aware of menstruation before menarche and sisters (55%) played the key role in providing information to them. Only 31% respondents were using reproductive tract infection (RTI) was observed more in respondents not maintaining hygienic practices (6.6%) as compared to those maintaining hygiene (2.6%).³⁹

A cross-sectional study was conducted in Ambala district Haryana, by Bachloo *et al.* The samples were taken by multi-stage random sampling method. A total 400 adolescents were taken from class 9th to 12th from four Secondary schools; two from urban and two from rural school. At the end of the study, the mean age of adolescent girls was 15.26 ± 1.61 years. 95% of adolescent's attained menarche at the time of interview; Mean age of menarche in the study subjects was 12.21 ± 1.70 year. 51.2% girls had negative reactions to menarche like scared, upset/guilt discomfort etc. Common problem

reported by adolescents girls were abdominal pain 77.6%, approx. 9.7% adolescent girls did not practice any restriction during menstruation. Most common restriction were restricted from physical activities and visit religious place, mother was the main sources of knowledge regarding menstruation. Majority of girls had not heard about menstruation at the time of menarche (55.7%) while 65.3% were afraid after first menstruation.⁴⁰

Srivastava *et al.*, conducted a study in five schools in Madhya Pradesh in which 537 girls participated. A questionnaire was provided to the school girls to know their knowledge and perception regarding menstruation, reproduction, nutrition and their views on the quality and usefulness of the Family life skills sessions. The study showed that most of the girls gained information about menstruation from their mothers. Menstruation is still considered as something shameful and young girls face many restrictions. Knowledge regarding menstruation, reproduction, contraception and diet is still lacking among the school girls. Family life skill sessions address these issues very effectively. Most of the girls enjoyed the sessions and were ready for more.⁴¹

Shanbhag *et al.*, conducted a cross sectional study in four selected Government High Schools in rural areas around Bangalore City to assess the perceptions and practices regarding menstrual hygiene among them. A pre-designed, pre-tested and structured questionnaire was administered. A total of 506 girls were interviewed. The average age was 14.08 with Standard deviation of 1.06 and range between 12-16yrs. 99.6% of the students had heard of menstruation and 57.9% had acquired this even knowledge before attaining menarche. 73.7% knew that menstruation was a normal phenomenon but only

28.7% had knowledge regarding menstruation. 48.1% did not know that menstruation was related to pregnancy. Only 44.1% used sanitary pad during the menstrual cycles. Among those who used cloth, only 31.3% used soap and water to clean them. 56.8% used soap and water to clean their genital organs and 88.8% of the girls took bath daily during menstruation.⁴²

A community-based interventional study was conducted by Nemade *et al.*, among 217 adolescents of Kalamboli, Navi- Mumbai, Maharashtra, India. A pre-tested questionnaire was administered and later health education regarding menstruation and healthy menstrual practices was imparted to the girls. Post-test was done after 3 months to assess the impact of health education. In the pre-test, menstrual perceptions amongst them were found to be poor and practices incorrect while in the post-test, there was a significant difference in the level of knowledge ($P < 0.01$). There was no significant difference in pre and post-test with regard to restrictions followed during menses ($P > 0.05$). In the pre-test, it was observed that 51.28 per cent of the girls washed their cloths only with water, 4.27 per cent of them sundried their cloths and 51.28 per cent of them burnt these for final disposal while in the post-test preceding health education, significant improvements were observed in their practices.⁴³

A cross-sectional study was conducted by Patavegar *et al.*, in urban community in New Delhi. About 440 school going adolescent girls participated in the study. The study results concluded that, the mean age of menarche in school going adolescent girls was 12.7 ± 1.00 years. Out of 440 girls studied 315 (71.59) faced some problem during

menstruation. 75% girls knew about menstrual cycle before their menarche. In most cases their first informant was their teacher. The study on the practices during menstruation showed that 378(85.92%) girls used sanitary pads during menstruation, 13(2.95%) girls used old cloth pieces. Age, Number of family members, Mother's education and Awareness about menstruation before menarche were significantly associated with good menstrual hygiene. ⁴⁴

Kamath et al., undertook a study to investigate the knowledge, practices and sources of information regarding menstruation and hygiene among adolescent girls in Udupi taluk, India. An epidemiologic cross-sectional study was carried among 550 school-going adolescent girls aged 13-16 years. A total of 270 were from urban and 280 from the rural area. Around 34% participants were aware about menstruation prior to menarche, and mothers were the main source of information among both groups. Overall, 70.4% of adolescent girls were using sanitary napkins as menstrual absorbent, while 25.6% were using both cloth and sanitary napkins. Almost half of the rural participants dried the absorbent inside their homes. Conclusions: There is a need to equip the adolescent girls with knowledge regarding safe, hygienic practices to enable them to lead a healthy reproductive life. ⁴⁵

Kanchan *et al.*, executed a cross-sectional, questionnaire-based study to assess the knowledge and the practices of menstrual hygiene among rural and urban school going adolescent girls in Sharda Vidyalaya, Hyderabad. Two hundred and sixty three adolescent girls of age 13-16 years were involved in this study. Only 154 (58.5%) of the

participants were aware about menstruation before menarche and the most important sources of the information were grandmothers, and friend, while sisters, mother and teachers were the other sources. Majority 226 (85.9%) of the girls were not aware of the cause of the bleeding. There are different types of restrictions which were practiced during menstruation.⁴⁶

3.18 MENSTRUAL EDUCATION:

Young and growing children have poor knowledge and lack of awareness about physical and physiological changes associated with the onset and presence of adolescence. They learn about sexuality and secondary sex characteristics primarily from their peer groups or other inappropriate sources.⁴⁷ Most of the girls are not informed about menarche and how to manage menstrual bleeding, and adolescents also lack knowledge about reproductive health issues. Therefore the need for creating awareness and increasing access to the requisite sanitary infrastructure related to menstrual hygiene is very important.²⁶

Adolescent girls often are reluctant to seek help regarding their menstrual problems. Understanding how to manage hygiene during menstruation is definitely one of the most essential ones for girls because poor maintenance of hygiene during menstruation results in several types of diseases such as Reproductive tract infections (RTI), pelvic inflammatory diseases, urinary tract infections etc. which may result in infertility of the girls.^{13, 48}

Adolescent girls should be educated about facts of menstruation, physiological implications, and proper hygienic practices with selection of disposable sanitary menstrual absorbent. This can be achieved through schools and colleges by providing health education to them.¹³

3.19 INFORMATION, EDUCATION & COMMUNICATION (IEC):

Information regarding various schemes through audio-visual aids, print media about provision of toilets, sanitary pads for adolescent girls, cessation of open defecation plays a vital role in health education. Interpersonal communication (IPC) on menstruation hygiene, use of sanitary pads and hygienic materials through small group in rural / urban community through self-help group, peer group discussion can be done to improve the knowledge of adolescent girls. Behaviour Change Communication (BCC) on utilization of toilets, use of sanitary pads instead of unhygienic materials can impart change in practices.³⁴

NEED FOR THE STUDY:

Due to poor menstrual hygiene management, many girls even drop schooling after primary education. Hence, catching them young and imparting adolescent health education to these rural teenage girls in schools is important and better if it is also reinforced and continued in the pre university and undergraduate colleges too; as revision at every level will certainly refresh their knowledge. In schools, as moral education is important, so also is health education for adolescents. Brigham Young, an American

leader, aptly said- You educate a man; you educate a man. You educate a woman; you educate a generation. Health education builds knowledge, motivates students to improve and maintain their health, prevent disease and reduce risky behaviours.

With this scenario, it would be appropriate to give educational intervention to girls at school level itself. Therefore, increased knowledge about menstruation right from childhood may escalate safe practices and may help in mitigating the suffering of millions of women. The present study was undertaken to explore the level of knowledge, attitudes, status of hygiene and practices regarding menstruation among adolescent school girls and educate them through teachers and peers. There are many studies related to assessing the knowledge, attitudes and practices during menstruation only few studies have found the impact of health education in India. Although, very few studies were done in Tamilnadu, but comparison of peer led intervention and direct intervention has not been done so far in Perambalur district. This study was intended to find out the effects of peer led and direct intervention on knowledge and practices related to menstruation among the study population.

4 MATERIALS AND METHODS

4.1 BACKGROUND INFORMATION

Perambalur District is centrally located in Tamilnadu and is 267 Km away, in southern direction, from Chennai. The District has an area of 1,757 Sq.Km. spread between 10.54' and 11.30' degree Northern latitude and 78.40' and 79.30' degree of the Eastern longitude. As per 2010 Census, the total Population of Perambalur District is 5,65,223. The density of population in the district is 321 per Sq.Km⁴⁹.

Boundaries of the district: East by Ariyalur District; West by Trichirappalli, Salem District; North by Cuddalore, Salem District and South by Trichirappalli District. The district is divided into four taluks: Kunnam, Perambalur, Veppanthattai, Alathur. The main occupation is Agriculture.

4.2 STUDY DESIGN: Intervention study was organized after completion of successful pilot study to assess the feasibility and sensitivity of the questionnaire.

4.3 STUDY SETTING: High schools and higher secondary government schools of Perambalur district.

As per Tamilnadu Education department, high school provides education till 10th grade and higher secondary school till 12th grade⁵⁰. There are 59 pre-primary schools, 202 primary schools, 61 middle schools, 38 high schools and 35 higher-secondary school. There are totally 73 government schools offering 8th & 9th grades in Perambalur district.⁵¹

4.4 STUDY PERIOD:

The study was conducted from June 2015 to October 2017 for a period of 29 months. Data collection including pre-test, intervention and post-test was done for 15 months.

4.5 STUDY PARTICIPANTS:

This study aimed to give health education regarding menstruation and menstrual hygiene at school level itself at early reproductive ages such as 13, 14 and 15 yrs. So study participants were selected from eight and ninth grades.

4.5.1 Inclusion Criteria: Adolescent girls of grades 8th and 9th, who have attained menarche 6 months back and who gave consent were included in the study.

4.5.2 Exclusion Criteria: Girls who were in long leave and could not be contacted in two subsequent visits were excluded from the study.

4.6 SAMPLING METHOD:

4.6.1 Sample Size Calculation:

Review of literature suggests that 50% of school going adolescents have adequate knowledge regarding menstruation and an effect size of 0.31 following intervention³.

The optimum sample size for the study was calculated using a following formula:

$$\text{Sample size} = \frac{(Z_{\alpha/2} + Z_{\beta})^2 * SD^2}{d^2}$$

At 80% Power and Significance level 0.05,

The standard normal deviate for $\alpha = Z_{\alpha} = 1.960$

The standard normal deviate for $\beta = Z_{\beta} = 0.842$

$$(Z_{\alpha/2} + Z_{\beta})^2 = 7.849$$

The standard deviation = 0.5

Effect Size, $d = 0.31$

Sample size = 81

The minimum required sample size is 81 for each group. For three groups it is as,

$$81 * 3 = 243$$

On considering the study design, design effect of 2 is multiplied,

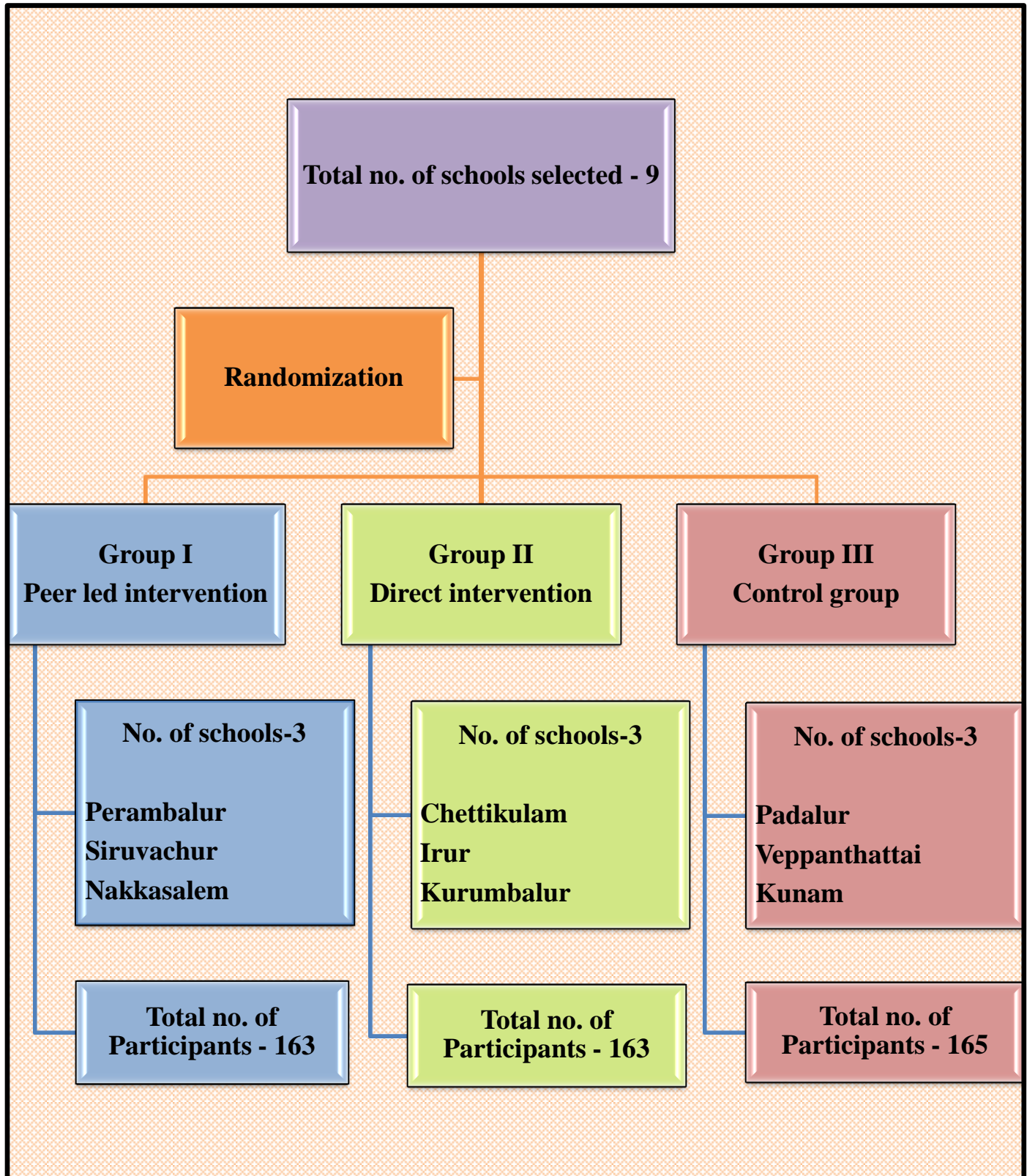
$$243 * 2 = 486$$

The minimum required sample is 486.

4.6.2 Selection of study participants:

Details regarding number of girls studying in 8 & 9 grades, location of school were collected from District Chief Educational office. Considering a minimum enrollment of 50 girls in class 8th and 9th, we needed approximately 9 schools for our study to reach a sample size of 486. From the list of schools, 9 schools were chosen by cluster random sampling. From selected schools, all eligible consenting adolescent girls were included as study participants for the study. Schools were randomly allocated into three groups – Peer led intervention group (I), Direct intervention group (II) and control group (III). It was made sure that the schools of different group were located 10 kms apart in order to prevent intervention dilution.

Figure 4: Flow chart of the study design



4.6 STUDY TOOL:

4.6.1 Semi structured Questionnaires were used (Annexure Enclosed)

A Self-administered, pre-tested and semi-structured Questionnaire (vernacular) was used for data collection. It was a modified questionnaire taken from previous studies^{2,3,7}. and was validated by experts. Initially, the questionnaire was drafted in English and then translated into Tamil. Back-translation from Tamil to English was carried out as a validation exercise before and after the pre-test questionnaire was administered. The questionnaire had six parts which are as follows:

- First – Socio demographic profile
- Second – Menarche and Menstruation details
- Third – Knowledge regarding menstruation & Menstrual Hygiene
- Fourth – Attitude of participants towards Menstruation & Menstrual hygiene
- Fifth – Practices during menstruation
- Sixth – Restrictions faced by participants during menstruation.

Questionnaire in detail:

1. First part collected information regarding Age of the participants, Family type, Number of family members, Religion, Parents' education, Parents' occupation, Total family income from which Per Capita Income (PCI) was calculated.

Socioeconomic status was classified based on B.G. Prasad scale⁵². Type of housing was also asked.

2. Second part of questionnaire collected Menarche and Menstruation details such as age at menarche, the duration of menstrual cycle; the interval between menstrual cycles. Along with that it also questioned about who was the source of information during menarche.
3. Third part assessed the Knowledge regarding menstruation & Menstrual Hygiene among the study participants. Questions were framed as “What is Menstruation?”, “What is the cause of Menstruation?”, “From where does the menstrual blood flow?”, “Have you heard of Menstrual Hygiene”, “ Whether poor hygiene leads to infections”, “What is normal duration of menstrual cycle, interval between menstrual cycles”, “When does normal cessation of menstruation occurs”, “Does menstruation indicate fertility?”. A total of 10 questions were asked pertaining to Menstruation and Menstrual hygiene. This section had both open and closed ended questions. Each correct answer was given 1 mark and wrong answer 0 marks. The scoring was done against a total of 10.
4. Attitude of participants towards Menstruation & Menstrual hygiene was revealed by fourth part of questionnaire. It intended to know how they felt during menstruation and during missed period. Whether it is better to know about menstruation before attaining menarche. And do they think that educating girls in these aspects is important. And “To whom are they comfortable to discuss menstrual issues?” was also asked.

5. Practices during menstruation were questioned in the fifth part. It had total of six questions like what type of absorbent used, frequency of changing it, changing it before sleep and disposal methods followed. Frequency and materials used for cleaning of genitalia was also asked. Each question was given as 0, 1 and 2 for no, poor and fair hygienic practice. The scoring was done against a total of 12.
6. Sixth part elicited the whether the participants faced any type of restrictions during menstruation. And if yes, types of restrictions were questioned.

Knowledge score:

The Knowledge score total was 10 and it is demarcated into Poor, Average, and Good as follows

Poor: 0 – 3, Average: 4 – 7 and Good: 8 – 10

Practice score:

The Practice score total was 12 and it is demarcated into Poor, Average, and Good as follows

Poor: ≤ 4 , Average: 5 – 8 and Good: ≥ 9

4.6.2 Pre-testing of Questionnaire:

The questionnaire was pre tested in 10 % of the study population to ascertain the comprehensibility of participants, feasibility and to estimate the average time taken for

answering it. Necessary modifications was made in the questionnaire after the pilot study and used for the study.

4.6.3 Information Education Communication (IEC) materials: (Annexure Enclosed)

Health education was the form of intervention and it aimed in creating awareness regarding Menstruation and Menstrual hygiene among the study participants. IEC materials were prepared from July 2015 to October 2015. All the IEC material required for health education was developed by referring standard IEC material like ANM training Manual⁵³, ASHA book for adolescent health⁵⁴, WASH manual⁵⁵, UNICEF training manual⁵⁶. IEC material included flipbooks, Pamphlets which was made in both English and Tamil (Vernacular language). In addition to this, a PowerPoint presentation was made in both languages as mentioned above. All these IEC materials were corrected and finalised by experts from Obstetrics gynaecology & Community Medicine departments.

4.7 DATA COLLECTION PROCEDURE:

4.7.1 Pre-test sessions:

After explaining the purpose of the study to the participants, the study was conducted in class room of the schools selected. Confidentiality was ensured. All ethical principles were adhered during data collection. Questions were explained to the students and they were asked to answer them without discussing among themselves. It was made

sure that all the questions were answered by the participants. On completing the pre-test, interventions were given as per the group.

Group I – PEER LED INTERVENTION

Group II – DIRECT INTERVENTION

Group III – NO INTERVENTION

4.7.2 Intervention sessions:

1st session: Through interaction and group discussion for 30 mins.

2nd session: Flipbooks, pamphlets were used for health education for 45 mins.

3rd session: Audio Visual aids (PowerPoint presentation) for 30 mins.

Intervention sessions were given at school class room for 1st session and Computer class room which had Audio Visual support for remaining sessions. Above mentioned sessions were given for 3 months with one month interval between sessions. The health education was given in Tamil, vernacular language to facilitate better understanding among the participants.

Group I:

Group I is the Peer-led Intervention group. After initial pre-test, 15 girls were selected for giving peer led education. The participants who volunteered were selected by discussing with their class teacher. The selected participants were identified as Peer

educators. Intervention in the form of Health education was given to Peer educators in above mentioned 3 sessions. During each session peer educators were motivated to communicate with their friends and create awareness. It was made sure that information has been passed to their peers by and they came up with many doubts which were clarified.

Group II:

Group II is the Direct Intervention group. Upon the completion of pre-test, all the participants were given health education directly by the principal investigator. The health education was given in three sessions mentioned above. It was made sure that all the queries were addressed immediately.

Group III:

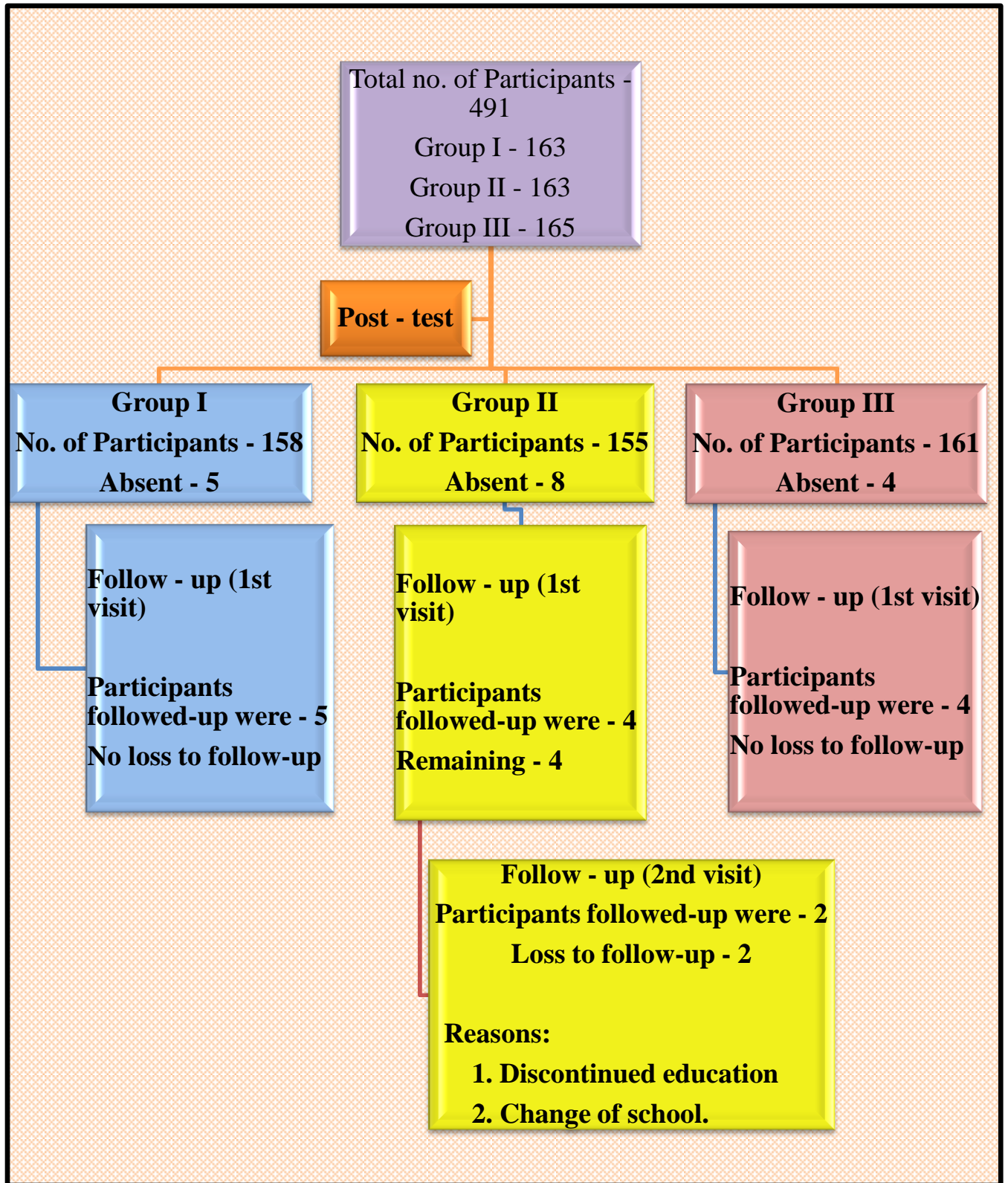
After pre-test, the students were not given any health education as this is control group. After a period of six months, a post test was conducted in this group to assess the follow up knowledge and practice. Once the post test was successfully completed one session of health education was given to all participants to provide awareness regarding the menstruation and menstrual hygiene.

4.7.3 Post-test sessions:

Health education sessions were carried out for 3 months for each school of group I & II. Following intervention an interval of 3 months were given and then post test was conducted. Post-test questionnaire assessed participants' knowledge and practices.

Participants who left the school or who were absent on the day of post-test were followed up by two visits again to collect data. Participants who were not available even after two visits were considered to be loss to follow up and were excluded from the study. Once the post was completed in all three groups, Health education was given to schools in control group to create awareness to the participants.

Figure 5 Flow chart for Post-test and Follow-up



4.8 DEFINITION OF STUDY VARIABLES

1. **Age of participant:** Age was taken in completed years
2. **Type of Family:** It was recorded as either nuclear or joint family⁵⁷.

Nuclear family: The family consisting of married couple and their dependent children

Joint family: It consist of number of married couples and their children who live together in the same household. All the men are related by blood and the women of the household are their wives, unmarried girls and widows of the family kinsmen.

3. **Literacy status:**⁵⁸

Illiterate: A person, who can neither read nor write or can only read but cannot write in any language, is treated as illiterate.

Literate: A person aged 7 years and above who can both read and write with understanding in any language has been taken as literate. It is not necessary for a person to have received any formal education or passed any minimum educational standard for being treated as literate. People who were blind and could read in Braille are treated to be literates.

4. **Socio-economic status:** Socio-economic status was recorded based on Modified B.G. Prasad's Classification.^{52,59}

Table 1: Modified BG Prasad's scale January 2017

Socioeconomic class		Per capita monthly income (in Rs.)	
		In 1961	In 2017
I	Upper class	≥ 100	≥6254
II	Upper middle class	50-99	3127-6253
III	Middle class	30-49	1876-3126
IV	Lower middle class	15-29	938-1875
V	Lower class	<15	<938

BG Prasad's classification is used in both urban and rural areas and is based on per capita monthly income. It was introduced in 1961⁵⁹ considering the base of Consumer Price Index (CPI) for 1960 as 100. The scale was modified in 1982 and 2001 by introducing linking factors to convert CPI (1982 and 2001) from the new base of 100 to the old base CPI (1960).

The linking factors for 1982 and 2001 were 4.93 and 4.63, respectively.

Price index for January 2017(by 2001 base)⁶⁰ = 274

Multiplication factor = Current index value (274)/Base index value in 2001 (100)
= 2.74

New income value = multiplication factor × old income value × 4.63 × 4.93.

5. Type of house:^{61,62}

Kutchha: Houses made from mud, thatch, or other low-quality materials with no floorings.

Semi-Pucca: Temporary roofs could be with cemented floor & wall or any one of it.

Pucca: Houses made with high quality materials throughout, including the floor, roof, and exterior walls.

6. Independent Variable: Health education regarding menstruation and menstrual hygiene practices.

7. Dependent Variables: In this study, dependent variables are knowledge and menstrual hygiene practices by adolescent girls.

4.9 DATA ANALYSIS:

All the Data collected were coded and entered in Microsoft Excel sheet which was re-checked and analyzed using Statistical Package for Social Sciences (SPSS) version 16.

1. Descriptive statistics were expressed as Mean and Standard Deviation for continuous variable and proportion for categorical variable.
2. Comparison of mean was done by paired t test.
3. Analysis of variance (ANOVA) test was done to analyze the differences in group means and multiple comparisons were done.

4.10 ETHICAL CONSIDERATION:

The study protocol was submitted to Institutional Research Committee of Human Subjects (IRCHS) as well as Institutional Ethics Committee of Human Subjects (IECHS) of Dhanalakshmi Srinivasan Medical College & Hospital, Perambalur. Clearance was obtained for conducting the study from both the committee. (No: IRCHS/DSMCH/020 & No: IECHS/DSMCH/017) (**Annexure Enclosed**)

- The study protocol was submitted and written permission to conduct the study was obtained from Chief Educational officer of Perambalur district.
- School principals of the selected schools were briefed regarding the study and permission was sought.
- After explaining about the purpose of the study, informed written consent was obtained from literate/ educated parents and verbal consent was obtained class teacher and illiterate parents.
- The study participants were fully explained about the study in their understandable vernacular language (Tamil) and were also informed that they can withdraw from the study at any time.
- All the ethical principles were adhered. Confidentiality was ensured throughout the study.
- Participants of control group were given Health education after completion of post-test in order to create awareness regarding Menstruation & Menstrual hygiene.

5 RESULTS

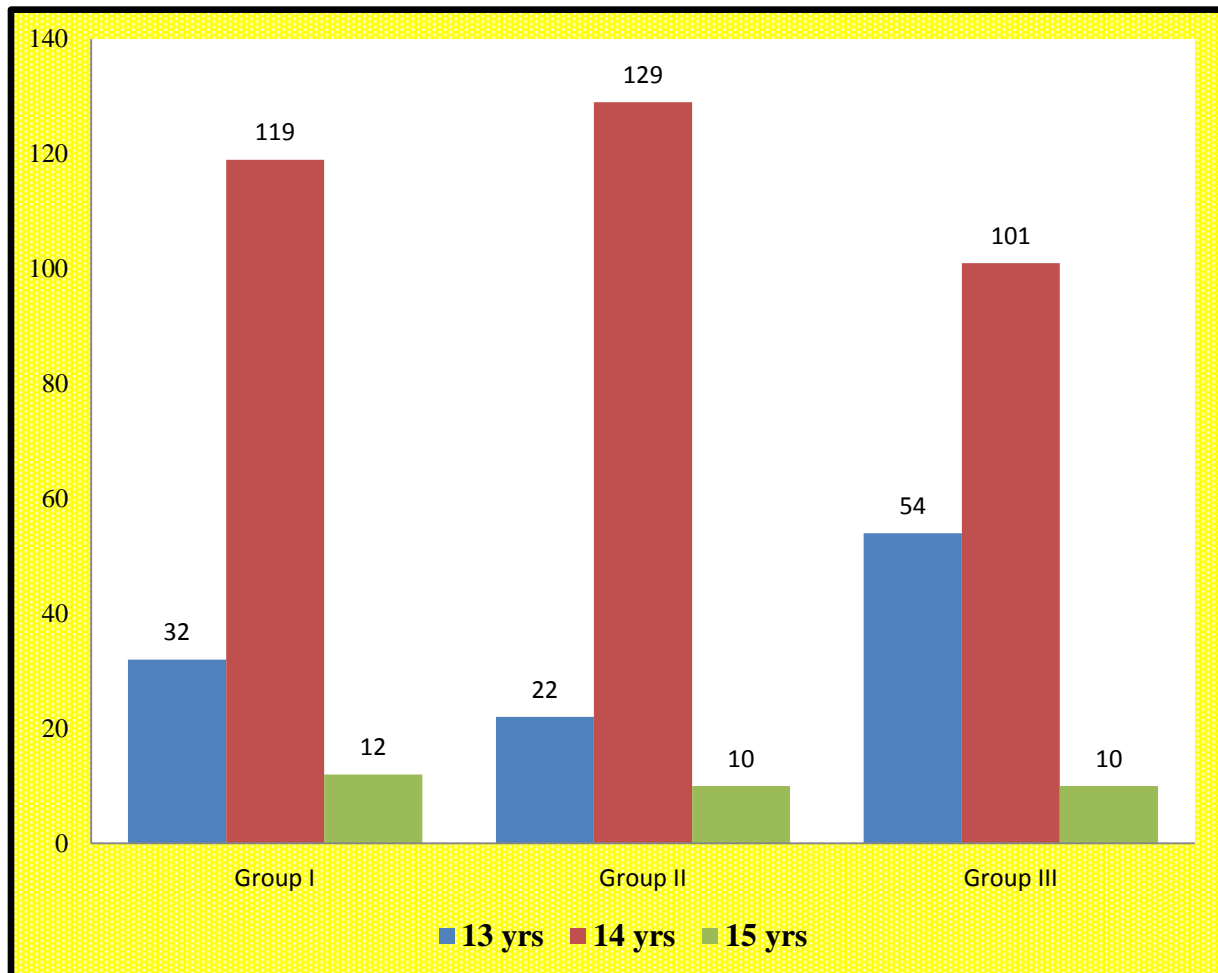
In the present study, totally 491 girls were enrolled for study. During follow up, 489 participants were available for post-test and 02 girls were considered as loss to follow up and excluded from the study. The numbers of participants were 163, 161, and 165 in group I, II and III respectively. Health Educational intervention was given through Peers, directly by researcher and no intervention for groups I, II and III respectively.

Results of this study are presented under the following headings

1. Distribution of study participants based on socio-demographic characteristics
2. Distribution of participants based on information regarding menstruation
3. Baseline knowledge, attitude, practices regarding menstruation and menstrual hygiene
4. Distribution of participants based on restrictions faced during menstruation
5. Comparison of Baseline and follow-up Knowledge within groups
6. Comparison of Baseline and follow-up Practice within groups
7. Comparison of Follow-up Knowledge score between groups
8. Comparison of Follow-up Practice score between groups

5.1 DISTRIBUTION OF STUDY PARTICIPANTS BASED ON SOCIO-DEMOGRAPHIC CHARACTERISTICS

Figure 6: Distribution of Study Participants based on Age



The age wise distribution of study participants are given in Figure 6. Majority i.e., 73% of participants were in the age group of 14 years followed by 13 and 15 yrs. There is no significant difference ($p>0.05$) in age distribution between the groups.

Table 2: Socio- Demographic Profile of the Study Population

CHARACTERISTICS	INTERVENTION GROUP I Peer Education N = 163 n (%)	INTERVENTION GROUP II Direct Education N = 161 n (%)	CONTROL GROUP III No Intervention N = 165 n (%)	Chi- Square value	P- value
1. Family type					
Nuclear	130 (79.8)	131 (81.4)	131 (79.4)	0.225	0.894
Joint	33 (20.2)	30 (18.6)	34 (20.6)		
2. Religion					
Hindu	159 (97.5)	150 (93.2)	161 (97.6)	5.581	0.061
Non-Hindu	4 (2.5)	11 (6.8)	4 (2.4)		
3. Mother's Education					
Illiterate	49 (30.1)	57 (35.5)	62 (37.6)	2.170	0.338
Literate	114 (69.9)	104 (64.5)	103 (62.4)		
4. Father's Education					
Illiterate	43 (26.4)	51 (31.7)	51 (30.9)	1.278	0.528
Literate	120 (73.6)	110 (68.3)	114 (69.1)		
5. Mother's Occupation					
Unemployed	42 (25.2)	26 (16.1)	43 (24.8)	5.873	0.053
Employed	121 (74.8)	135 (83.8)	122 (75.1)		
6. Father's Occupation					
Unemployed	23 (14.1)	16 (10.0)	10 (6.0)	5.895	0.052
Employed	140 (85.9)	145 (90.0)	155 (93.9)		
7. House type					
Kutchha	70 (42.9)	75 (46.6)	77 (46.7)	6.638	0.156
Semi-pucca	60 (36.8)	63 (39.1)	71 (43.0)		
Pucca	33 (20.2)	23 (14.3)	17 (10.3)		

The socio-demographic profile of the study population distributed in each group is compared in Table 2. Among the participants, almost 80% were from nuclear family, 95% of the participants were Hindu by religion. Regarding parent's education, 65% and 70% of participant's Mother and Father were literate respectively. Regarding occupation, 77.9% and 89.9% of participants' mother and father were employed. Among the study participants, 45.4% live in kutchha type of house. All the socio-demographic characteristics were found to be similar in all three groups.

Table 3: Distributions of Study participants based on Socio-Economic Status

SOCIO-ECONOMIC STATUS	INTERVENTION GROUP I Peer Education N = 163		INTERVENTION GROUP II Direct Education N = 161		CONTROL GROUP III No Intervention N = 165	
	n	(%)	n	(%)	n	(%)
I (≥ 6254)	0	(0.0)	1	(0.6)	7	(4.2)
II (3127 – 6253)	4	(2.4)	2	(1.2)	8	(4.8)
III (1876 – 3126)	49	(30.1)	46	(28.5)	48	(29.1)
IV (938 – 1875)	98	(60.1)	102	(63.3)	91	(55.2)
V (< 938)	12	(7.4)	10	(6.2)	11	(6.7)

Socio economic status was classified based on Modified B.G.Prasad scale and is given in Table 3. More than half of participants i.e., 59.5% of the study participants belonged to class IV.

5.2 DISTRIBUTION OF PARTICIPANTS BASED ON INFORMATION REGARDING MENSTRUATION

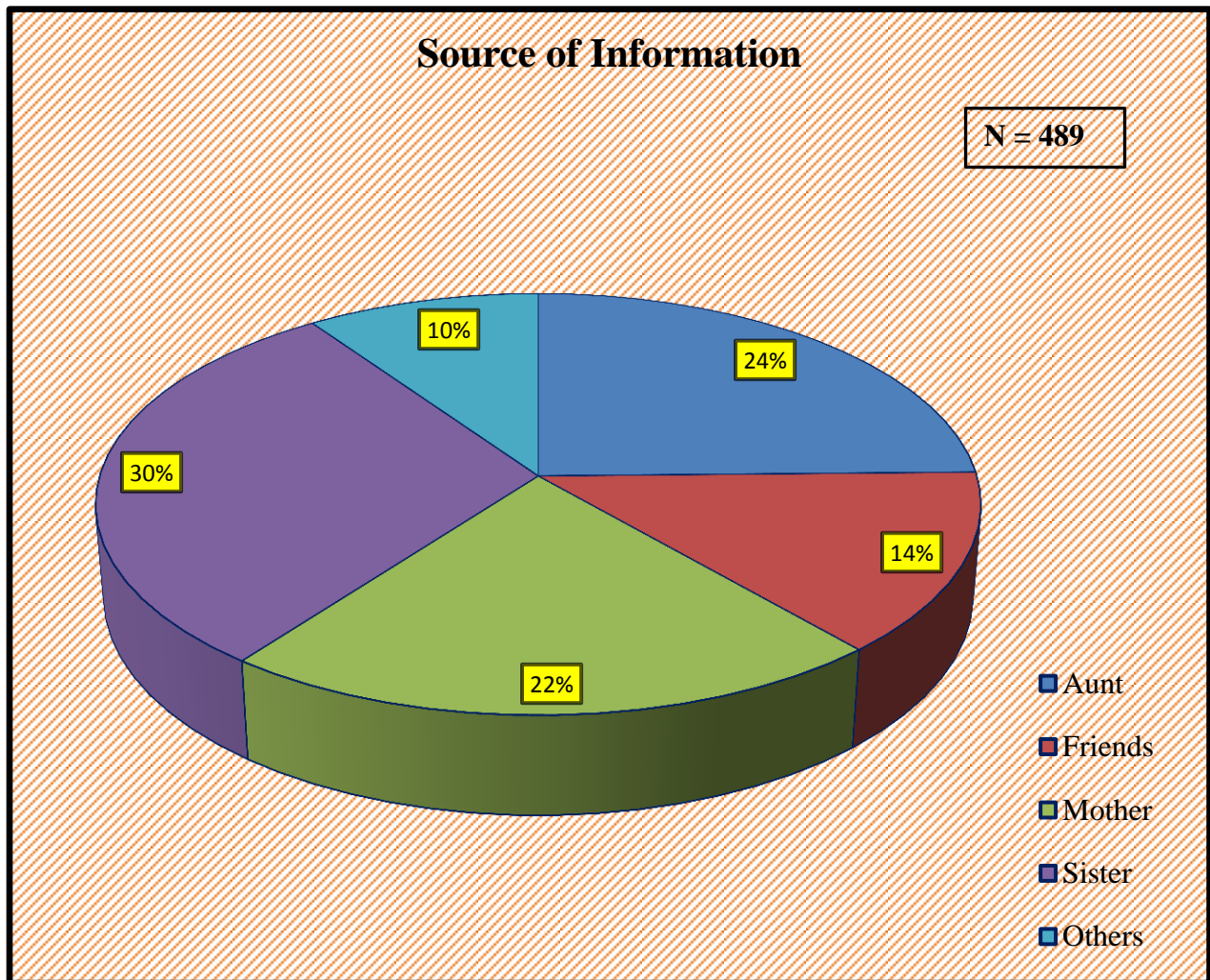
Table 4: Information regarding Menarche & Menstruation

CHARACTERISTICS	INTERVENTION GROUP I Peer Education N = 163		INTERVENTION GROUP II Direct Education N = 161		CONTROL GROUP III No Intervention N = 165	
	n	(%)	n	(%)	n	(%)
Age at menarche						
≤12	55	(33.7)	51	(31.7)	60	(36.4)
13	86	(52.8)	102	(63.4)	88	(53.3)
≥14	22	(3.5)	8	(4.9)	17	(10.3)
Regularity of menstrual cycles						
Regular cycles	138	(84.7)	134	(83.3)	134	(81.2)
Irregular cycles	25	(15.3)	27	(16.7)	31	(18.8)
Source of information						
Friends	27	(16.5)	25	(15.5)	16	(9.6)
Mother	34	(20.8)	31	(19.2)	41	(24.8)
Aunt	28	(17.1)	41	(25.4)	52	(31.5)
Sister	60	(36.8)	42	(26.0)	45	(27.2)
Others	14	(8.5)	22	(13.6)	11	(6.6)

Table 4 gives information regarding Menarche and Menstruation. Age at Menarche in 56.5% participants was 13 years. It is found to be similar in all three groups.

Among the participants, 83% of them were having regular menstrual cycles whereas, 17% girls had irregular cycles.

Figure 7: Source of information at Menstruation



The Source of information regarding menstruation is given above in Figure 7. About 30% of the girls answered that their source of information was sister. Following

that, 24% girls answered as aunt. About 22% and 14% girls answered mother and friends respectively, whereas others (10%) category included grandmother and neighbors.

Table 5: Mean Distributions of Menarche & Menstruation Details

CHARACTERISTICS	INTERVENTION GROUP I Peer Education N = 163		INTERVENTION GROUP II Direct Education N = 161		CONTROL GROUP III No Intervention N = 165	
	Mean	(SD)	Mean	(SD)	Mean	(SD)
Age at Menarche(years)	12.79	(0.68)	12.69	(0.66)	12.69	(0.73)
Duration of menstruation(days)	4.71	(1.15)	4.68	(1.14)	5.03	(1.23)
Interval between cycles(days)	29.80	(3.21)	29.50	(3.80)	29.10	(3.49)

Mean Distribution of Menstruation details is given in Table 5. The Mean age of Menarche is 12.7 years (± 0.66) and it is equally distributed among all the three groups. Mean duration of menstruation cycle and Mean interval between cycles were 4.71 days (± 1.15) and 29.50 days (± 3.50) respectively and it is equally distributed among all the three groups. A one-way analysis of variance (ANOVA) was calculated for comparing the mean age at menarche, Mean duration of cycle and Mean interval between the cycles. It was found that the difference was insignificant ($P > 0.05$).

5.3 BASELINE KNOWLEDGE, ATTITUDE, PRACTICES REGARDING MENSTRUATION AND MENSTRUAL HYGIENE

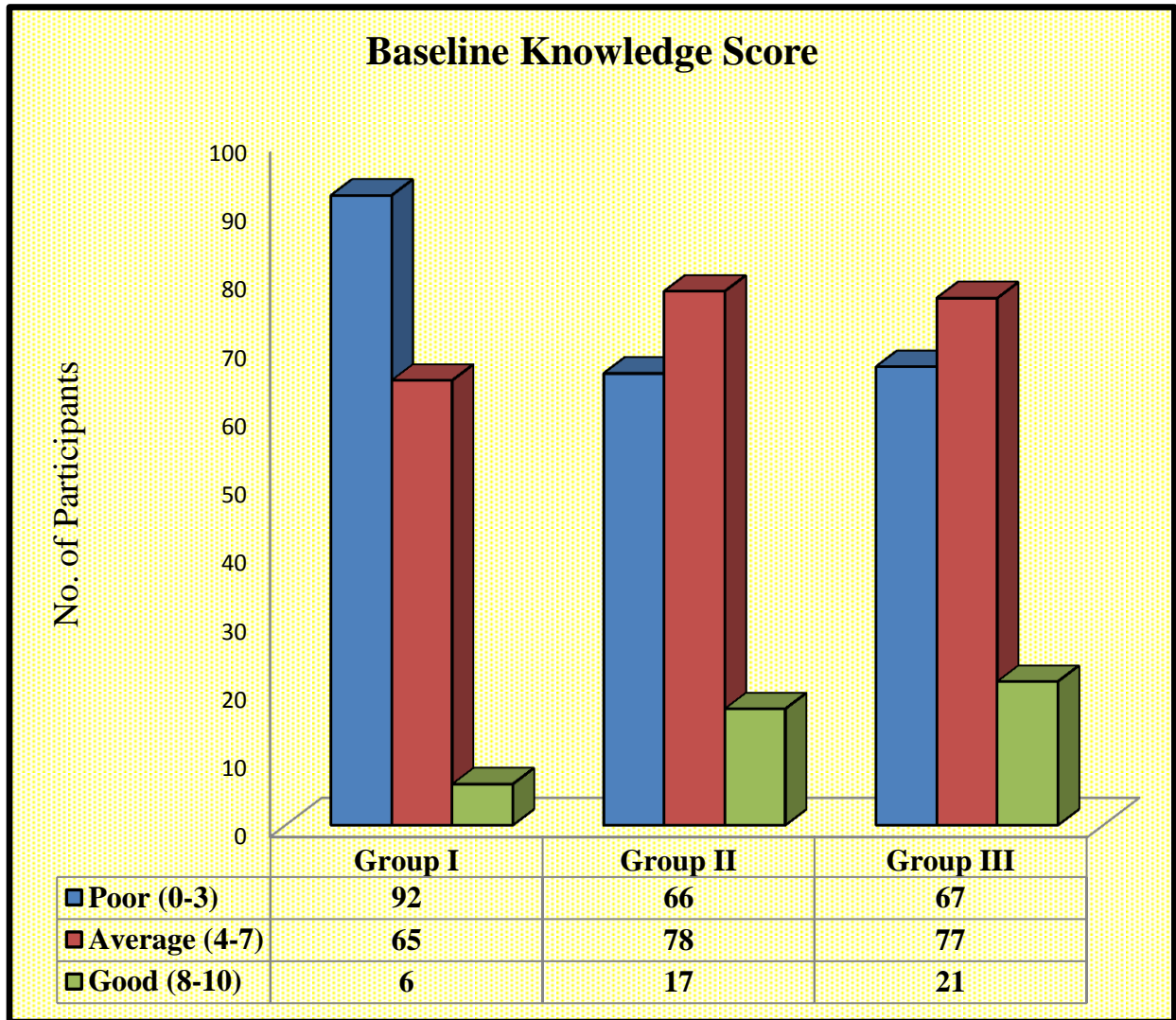
5.3.1 Pre-test results comparing Knowledge among Study Participants

Table 6: Baseline Knowledge regarding Menstruation and Menstrual hygiene among Study Population

Questions asked (Correct response)	INTERVENTION GROUP I Peer Education N = 163		INTERVENTION GROUP II Direct Education N = 161		CONTROL GROUP III No Intervention N = 165	
	n	(%)	n	(%)	n	(%)
1. What is Menstruation	68	(41.7)	96	(59.6)	96	(58.2)
2.Cause of Menstruation	57	(35.0)	64	(39.8)	79	(47.9)
3.From where does the blood flow during menstruation	20	(12.3)	46	(28.6)	47	(28.5)
4.Does food affect menstruation	84	(51.5)	89	(55.3)	95	(57.6)
5.Have you heard about Menstrual Hygiene	89	(54.6)	107	(66.5)	98	(59.4)
6.Poor hygiene leads to infection	62	(38.0)	90	(55.9)	87	(52.4)
7.Normal duration of menstruation	52	(31.9)	58	(36.0)	49	(29.7)
8.Normal interval of menstrual cycle	44	(26.9)	31	(19.2)	42	(25.5)
9.Age at Menopause	53	(32.5)	52	(32.2)	46	(27.8)
10.Menstruation indicates fertility	72	(44.2)	89	(55.3)	82	(49.7)

Pre-test knowledge assessment and its distribution among groups are given in Table 6. About 53.1% of participants were able to answer that Menstruation was a Physiological process and 40.9% of girls were aware that it is caused by hormones. Among the study participants, 23.1% answered that menstrual blood flows from uterus. More than half (54.8%) of girls said that food doesn't affect menstruation. Almost 60.1% girls said that they have heard about menstrual hygiene and 48.7% were aware that poor menstrual hygiene can lead to infection and reproductive tract diseases. About 32.5%, 14.9% and 30.8% of girls had correct knowledge regarding normal duration of menstrual cycle, normal interval between cycles and age at menopause respectively. Almost 49.7% girls were aware that menstruation indicates fertility.

Figure 8: Distribution of Baseline Knowledge Score among groups



The knowledge score were demarcated into Poor, Average, and Good and is given in Figure 8. Mean score was calculated for each group to facilitate comparison. The pre-test Knowledge Mean scores (SD) were 4.85(2.01), 5.42(2.08) and 5.31(2.58) for group I, II and III respectively. A one-way analysis of variance (ANOVA) was done and showed that the difference of mean Knowledge score between the groups were not significant (P value>0.05).

5.3.2 PRE-TEST RESULTS SHOWING ATTITUDE OF THE STUDY

POPULATION

Table 7: Distribution of Study Population based on their Attitude towards Menstruation and Menstrual hygiene

Questions asked	INTERVENTION GROUP I Peer Education N = 163		INTERVENTION GROUP II Direct Education N = 161		CONTROL GROUP III No Intervention N = 165	
	n	(%)	n	(%)	n	(%)
1.How did you feel at menarche						
Afraid	102	(62.6)	82	(51.6)	84	(50.9)
Embarrassed	26	(16.0)	32	(19.9)	34	(20.6)
Guilty	2	(1.2)	5	(3.1)	4	(2.4)
Nothing	33	(20.2)	41	(25.5)	43	(26.1)
2. How do feel when you don't get periods						
Happy	47	(28.8)	37	(23.0)	25	(15.2)
Afraid	57	(35.0)	64	(39.8)	60	(36.4)
Worried	37	(22.7)	41	(25.5)	51	(30.9)
Nothing	22	(13.5)	19	(11.8)	29	(17.6)
3.Is it better to know about menstruation before attaining menarche						
Yes	97	(59.5)	114	(70.8)	112	(67.9)
No	66	(40.5)	47	(29.2)	53	(32.1)
4.Educating girls regarding M & MH is necessary						
Yes	139	(85.3)	135	(83.9)	130	(78.8)
No	24	(14.7)	47	(15.5)	35	(21.2)

The fourth part of Questionnaire was intended to explore the Attitude of participants towards Menstruation and menstrual hygiene. When questioned regarding first reaction towards menarche about 50% of participants responded that they were afraid. Among the participants 22.3% answered that they were happy when they don't get periods. 82.6% of the participants responded that educating girls regarding Menstruation and Menstrual Hygiene is necessary. The results are tabulated in above Table 7.

Figure 9: Participants' preferred persons to discuss Menstrual issues

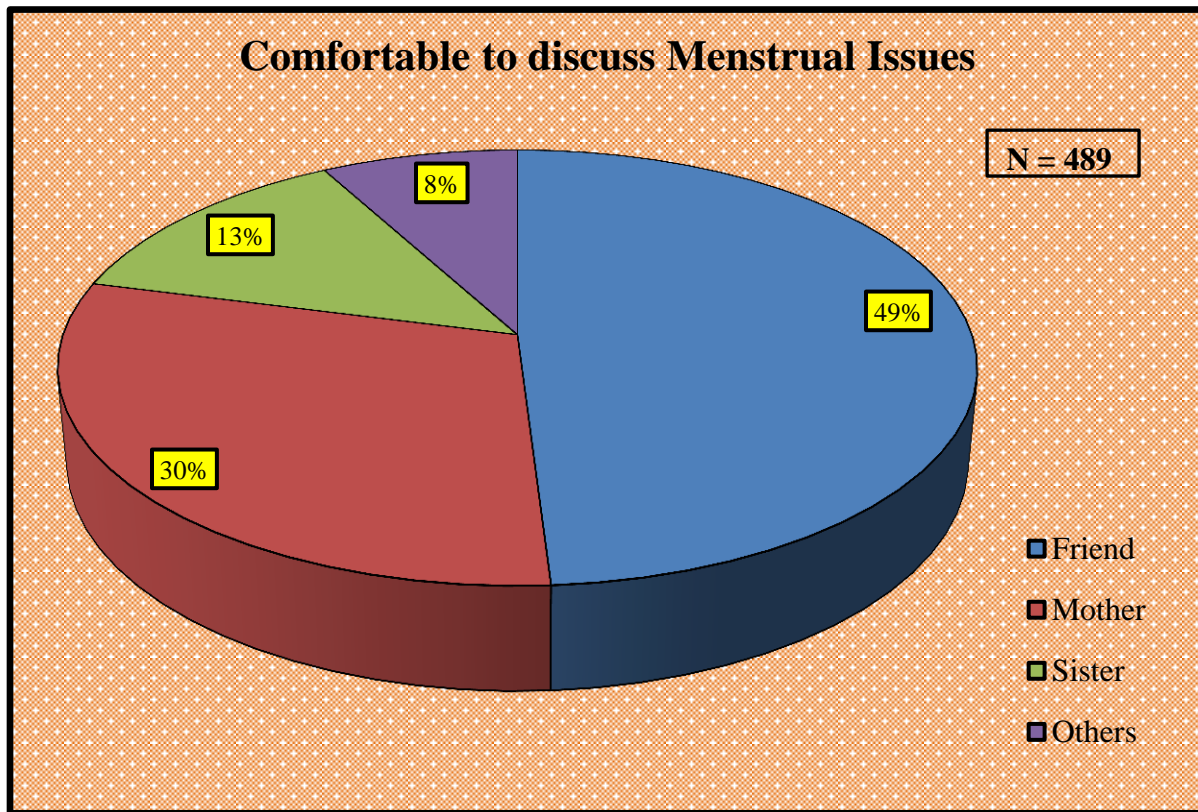


Figure 9 shows to whom are the participants were comfortable to discuss menstruation related issues. When the participants were questioned "To whom are they comfortable to discuss Menstruation and Menstrual hygiene related issues?" about 49%

of girls responded as friends, followed by mother and sister. About 8% of the girls answered others which included teachers, aunt and grandmother.

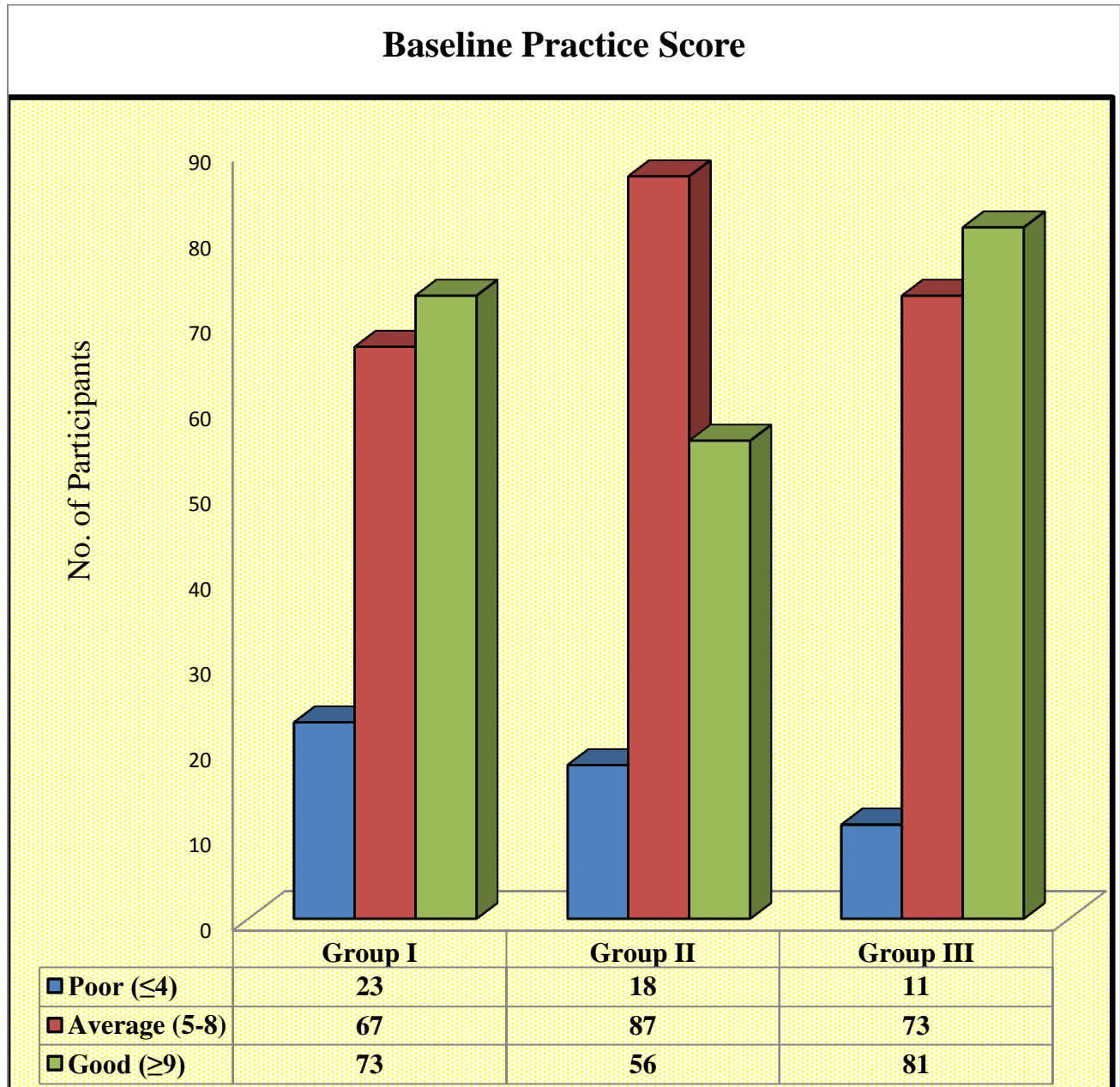
5.3.3 PRE-TEST RESULTS COMPARING THE MENSTRUAL HYGIENE PRACTICES OF THE STUDY POPULATION

Table 8: Baseline Assessment of Menstrual Hygiene Practices of Study Population

Questions asked	INTERVENTION GROUP I Peer Education N = 163		INTERVENTION GROUP II Direct Education N = 161		CONTROL GROUP III No Intervention N = 165	
	n	(%)	n	(%)	n	(%)
1.Absorbent used Sanitary Napkin	163	(100.0)	161	(100.0)	165	(100.0)
2.Frequency of changing absorbent during day						
≤ 2	36	(22.1)	43	(26.7)	49	(29.7)
≥ 3	127	(77.9)	118	(73.3)	1.16	(70.3)
3.Change absorbent before sleep						
Yes	100	(61.3)	92	(57.1)	102	(61.8)
No	63	(38.7)	69	(42.9)	63	(38.2)
4.Disposal of used absorbent						
Fair Practice	143	(87.7)	122	(75.8)	145	(87.9)
Poor Practice	20	(12.3)	39	(24.2)	20	(12.1)
5.Regular cleaning of genitalia						
Fair Practice	98	(60.1)	70	(43.5)	83	(50.3)
Poor Practice	65	(39.9)	91	(56.5)	82	(49.7)
6.Materials used for cleaning						
Water with soap	88	(54.0)	72	(44.7)	90	(54.5)
Water only	48	(29.4)	53	(32.9)	62	(37.6)
Not washing regularly	27	(16.6)	36	(22.4)	13	(7.9)

Practices during menstruation was elicited in fifth part of the questionnaire and compiled in Table 8. It was found that about 100% of the participants in all three groups use sanitary napkin during menstruation. Regarding frequency of changing absorbent, 73.3% of participants answered that they change it more than 3 times in a day. They were asked whether they change pad before sleep for which 60% of participants responded yes. Burying, burning, disposing in waste bin after proper wrapping was considered to be fair practice and 83.8% girls were practicing it. About 51.3% of participants were cleaning their genitalia regularly.

Figure 10: Distribution of Baseline Practice Score among Groups

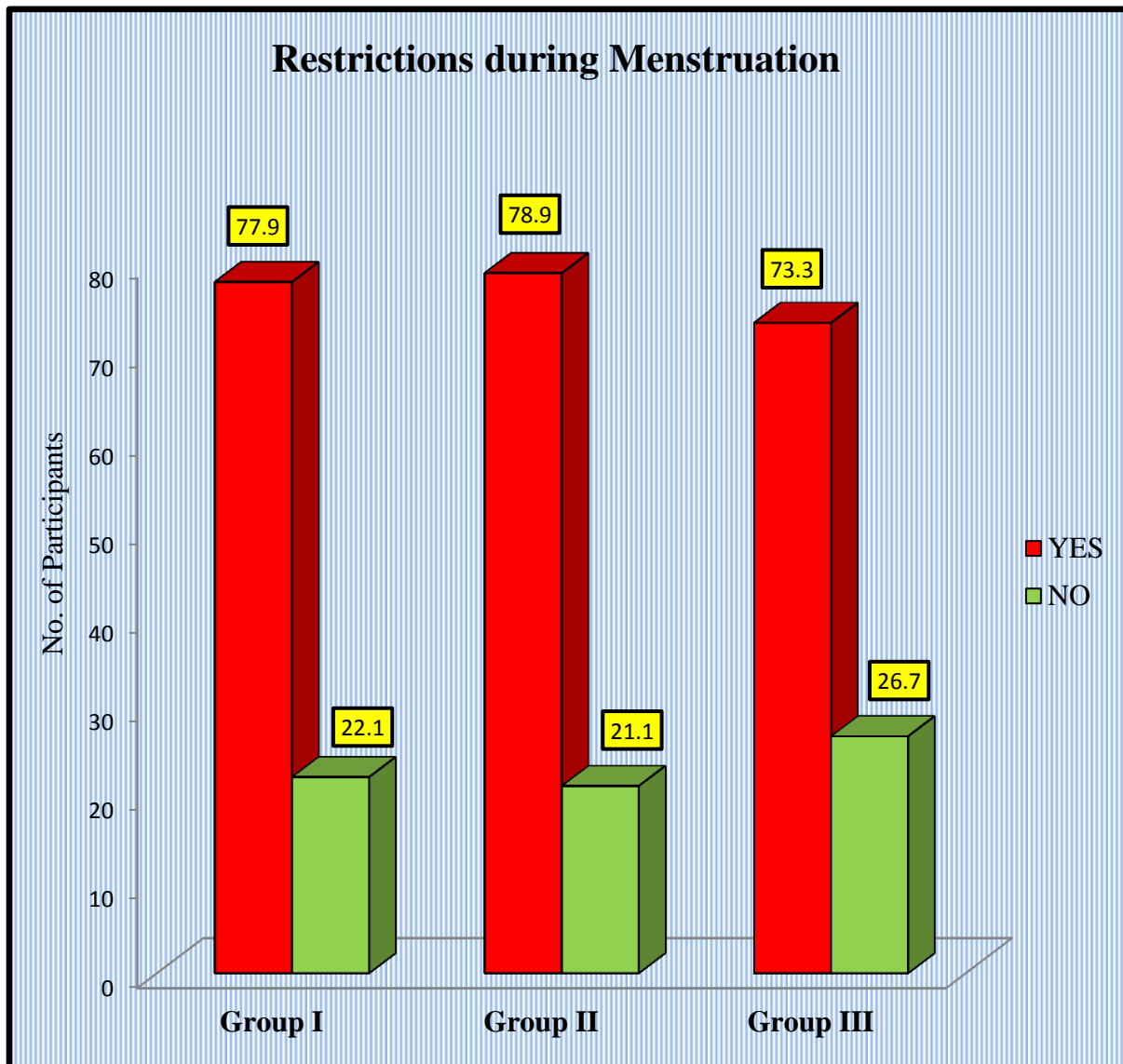


A total of 12 marks were given for practices during menstruation. The practice score was categorised into poor practice (≤ 4), Average practice (5-8) and Good practice (≥ 9). The Pre-test practice Mean scores (SD) were 7.96(2.74), 7.71(2.54) and 8.46(2.41)

for group I, II and III respectively. The practice score for each group is given in Figure 10. A one-way analysis of variance (ANOVA) was done and showed that the difference of mean Practice score between the groups were not significant (P value >0.05).

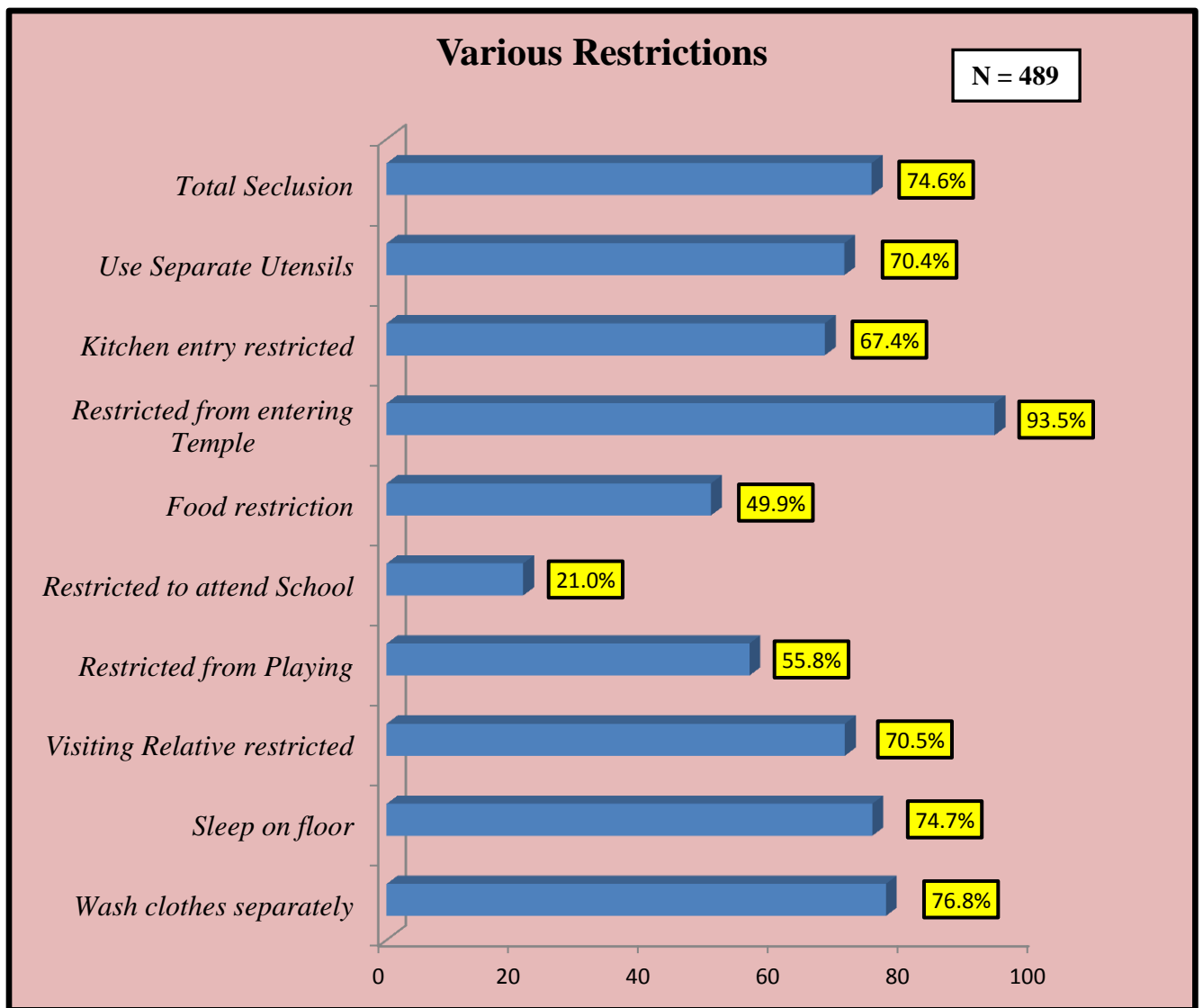
5.4 DISTRIBUTION OF PARTICIPANTS BASED ON RESTRICTIONS FACED DURING MENSTRUATION

Figure 11: Restrictions faced by Participants during Menstruation



The final part of the questionnaire probed the details regarding restrictions faced by the participants and also type of restrictions during menstruation. On taking average for three groups, 76.7% of girls are facing different kinds of restriction during menstruation and it is given in Figure 11.

Figure 12: Various types of Restrictions faced by Participants during Menstruation



Participants were asked about the various types of restriction they face during menstruation and it is depicted in Figure 12. About 74.6% of them responded that they were secluded totally and not allowed to touch anyone at house whereas 70.4% of girls were given separate utensils for eating. About 67.4% of them were restricted from entering kitchen during menstruation. Among them, 93.5% of girls faced restriction to enter Pooja room or temple and about 21% of girls were not allowed to go to school. About 55.8% and 70.5% of girls were not allowed to play and visit neighbors or relatives respectively. About one-third of them were made to sleep on floor (74.7%) and wash their clothes separately (76.8%) during menstruation.

Table 9: Various Types of Restrictions faced by Participants during**Menstruation**

Types of Restrictions	INTERVENTION GROUP I Peer Education N = 163		INTERVENTION GROUP II Direct Education N = 161		CONTROL GROUP III No Intervention N = 165	
	n	(%)	n	(%)	n	(%)
Total seclusion	97	(76.3)	91	(71.6)	92	(76.0)
Separate utensils	97	(76.3)	78	(61.4)	89	(73.5)
Kitchen	90	(70.8)	79	(62.2)	84	(69.4)
Pooja/ Temple	126	(99.2)	115	(90.5)	110	(90.9)
Foods	57	(44.8)	63	(49.6)	67	(55.3)
School going	19	(14.9)	33	(25.9)	27	(22.3)
Playing	86	(67.7)	69	(54.3)	55	(45.4)
Visiting Neighbour	95	(74.8)	88	(69.2)	82	(67.7)
Sleep on floor	94	(74.0)	88	(69.2)	98	(80.9)
Wash clothes	104	(81.8)	87	(68.5)	97	(80.1)

The comparison of restrictions during Menstruation between each group is given in Table 9. The types of restrictions were total seclusion, to use separate utensils, not allowed to enter or cook in kitchen, restricted from entering/performing Pooja, etc. It is almost similar in all three groups.

5.5 COMPARISON OF BASELINE AND FOLLOW-UP KNOWLEDGE WITHIN GROUPS

Table 10: Comparison between Baseline & Follow-Up Knowledge Score

KNOWLEDGE SCORE	BASELINE		FOLLOW-UP		PERCENTAGE CHANGE %
	n	(%)	n	(%)	
GROUP I					
Poor (0-3)	92	(56.4)	28	(17.2)	-39.2
Average (4-7)	65	(39.8)	76	(46.6)	6.8
Good (8-10)	06	(3.6)	59	(36.2)	32.4
GROUP II					
Poor (0-3)	66	(41.0)	9	(5.6)	-35.4
Average (4-7)	78	(48.4)	68	(42.2)	-6.2
Good (8-10)	17	(10.6)	84	(52.2)	41.6
GROUP III					
Poor (0-3)	67	(40.6)	49	(29.7)	-10.9
Average (4-7)	77	(46.7)	81	(49.1)	2.4
Good (8-10)	21	(12.7)	35	(21.2)	8.5

Following intervention, a Post-test was conducted and the results were compared with the Pre-test. Knowledge and practice component were elicited in the post-test. Comparison of Baseline and Follow-up Knowledge is given in Table 10. There is a decrease in number of participants who had poor knowledge in all groups but comparatively more in group I & II. The percentage of participants with good knowledge has increased by 32.4% and 41.6% in group I and II respectively.

Figure 13A: Comparison of Mean Baseline & Follow-Up Knowledge Score for Group I

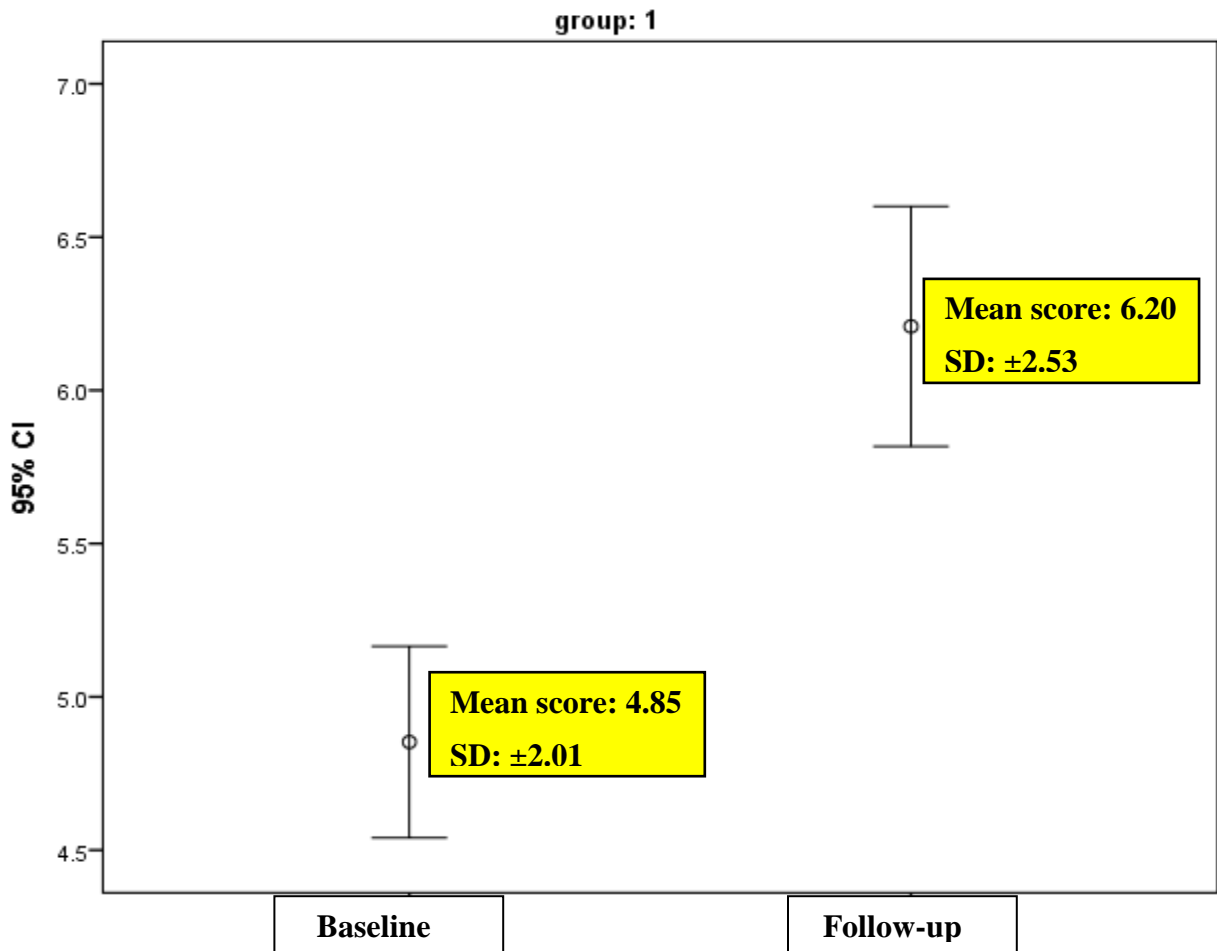


Figure 13B: Comparison of Mean Baseline & Follow-Up Knowledge Score for Group II

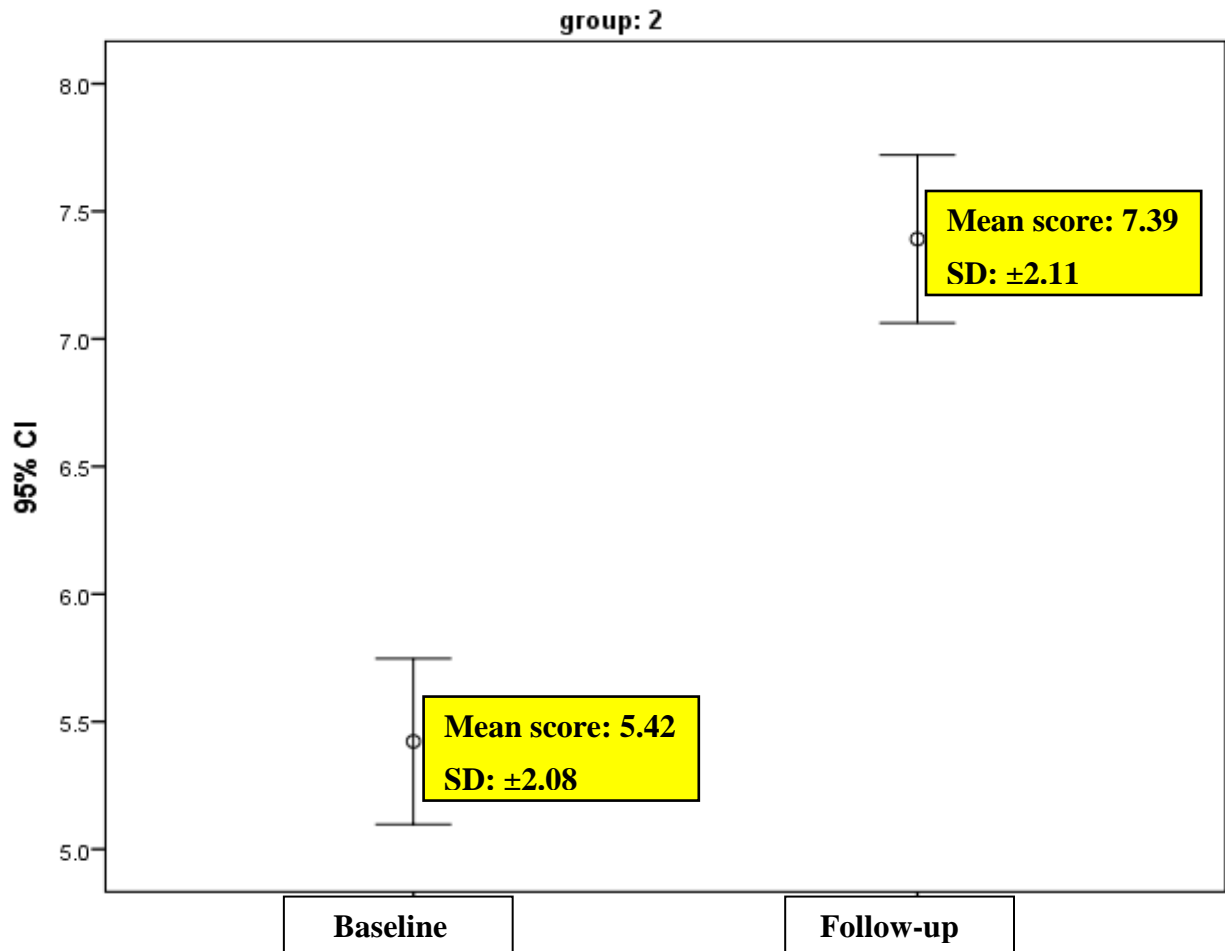
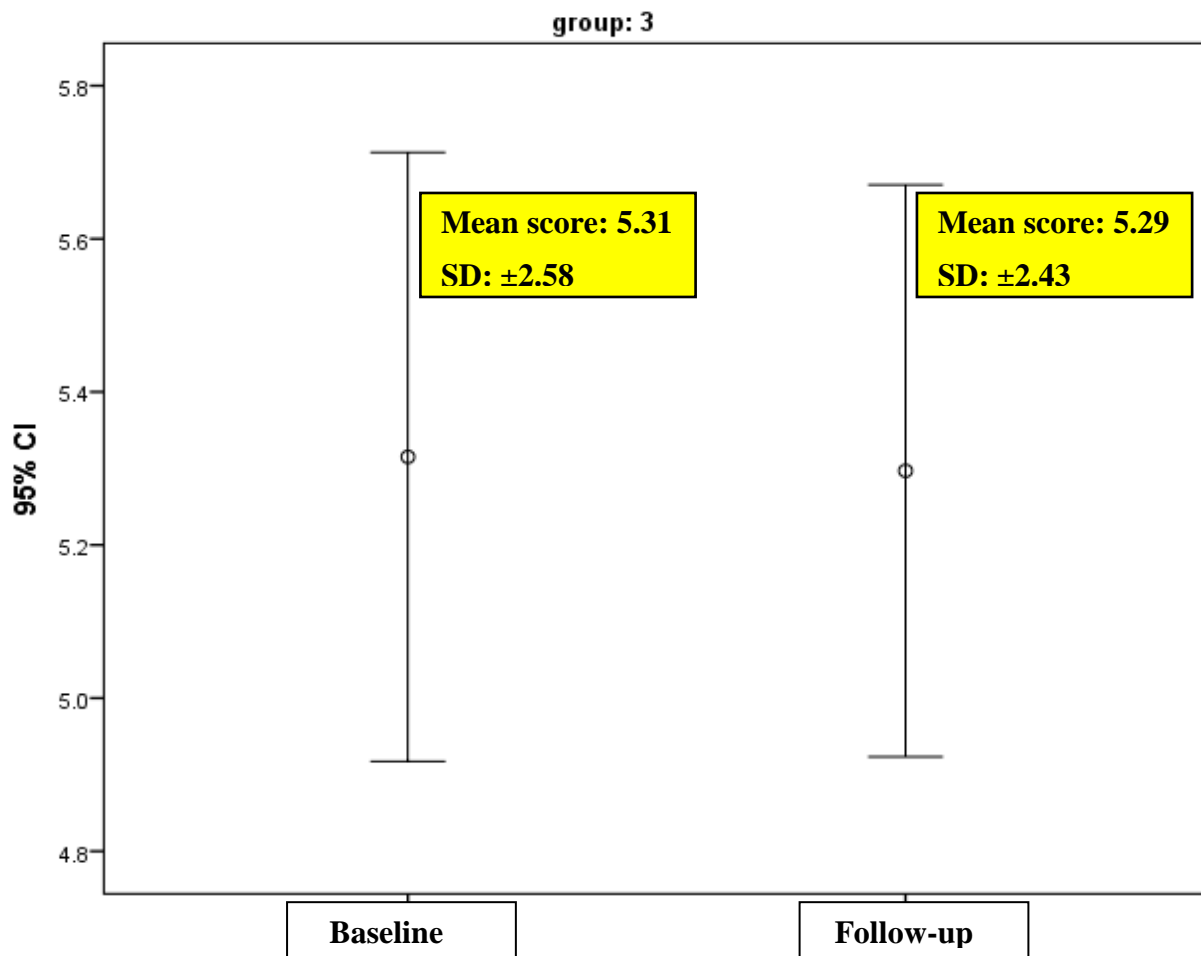


Figure 13C: Comparison of Mean Baseline & Follow-Up Knowledge Score for Group III



The follow-up Mean Knowledge scores (SD) were 6.20 (2.53), 7.39 (2.11) and 5.30 (2.43) for groups I, II and III respectively. The Mean scores and its difference are plotted as Error bars with 95% confidence interval in figure 13A, 13B and 13C for group

I, II and III respectively. While comparing the baseline and follow-up, there is increase of mean Knowledge score in both group I and II.

Table 11: Comparison of Mean Baseline & Follow-Up Knowledge Scores and its Significance

Group	Paired Differences					t value	df	Sig. (2-tailed)
	Mean (Baseline – Follow up)	SD	Standard. Error Mean	95% C.I of the Difference				
				Lower	Upper			
I	-1.35583	3.17140	.24840	-1.84635	-.86530	-5.458	162	.000
II	-1.96894	2.56277	.20197	-2.36782	-1.57006	-9.748	160	.000
III	.01818	3.21481	.25027	-.47599	.51235	.073	164	.942

The Mean difference of knowledge score and its significance are given in Table 11. On comparing Baseline and Follow-up Mean Knowledge score, there is a difference in group I & II. Paired t test confirms the result and it shows significant difference ($p < 0.05$) in Knowledge score in both group I & II. There is no significant difference in group III.

5.6 COMPARISON OF BASELINE AND FOLLOW-UP PRACTICE WITHIN GROUPS

Table 12: Comparison between Baseline & Follow-Up Practice Score

PRACTICE SCORE	BASELINE		FOLLOW-UP		PERCENTAGE CHANGE %
	n	(%)	n	(%)	
GROUP I					
Poor \leq 4	23	(14.1)	6	(3.7)	-10.4
Average(5-8)	67	(41.1)	29	(17.8)	-23.3
Good \geq 9	73	(44.7)	128	(78.5)	33.8
GROUP II					
Poor \leq 4	18	(11.2)	8	(5.0)	-6.2
Average(5-8)	87	(54.0)	13	(8.1)	-45.9
Good \geq 9	56	(34.8)	140	(86.9)	52.1
GROUP III					
Poor \leq 4	11	(6.7)	7	(4.2)	-2.5
Average(5-8)	73	(44.2)	50	(30.3)	-13.9
Good \geq 9	81	(49.1)	108	(65.5)	16.4

Comparison of Baseline and Follow-up Practice during Menstruation is given in Table 12. There is a decrease in number of participants who had poor practice score in all groups but comparatively more in group I & II. The percentage of participants with good practice score has increased by 33.8% and 52.1% in group I and II respectively.

Figure 14A: Comparison of Mean Baseline & Follow-Up Practice Score for Group I

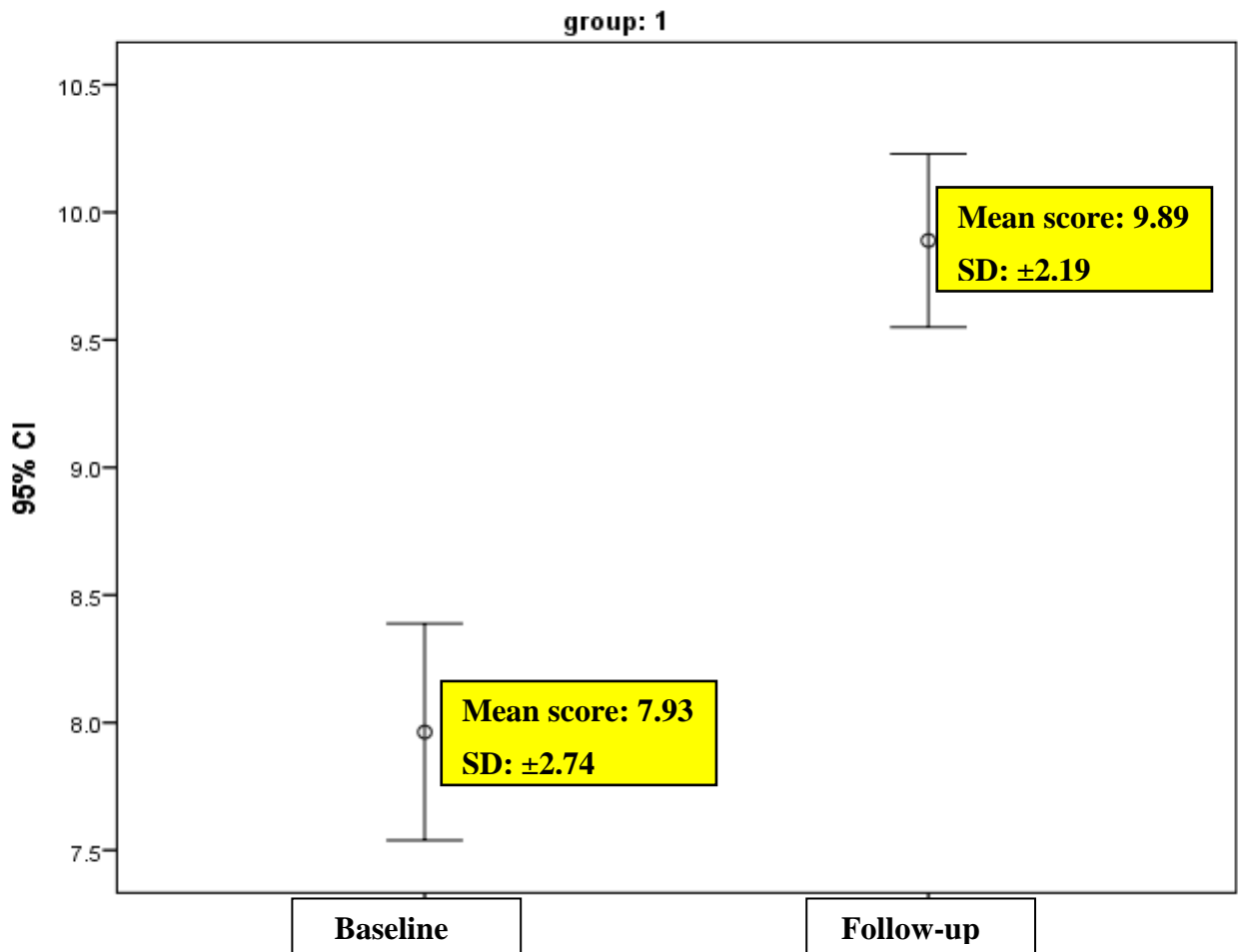


Figure 14B: Comparison of Mean Baseline & Follow-Up Practice Score for Group II

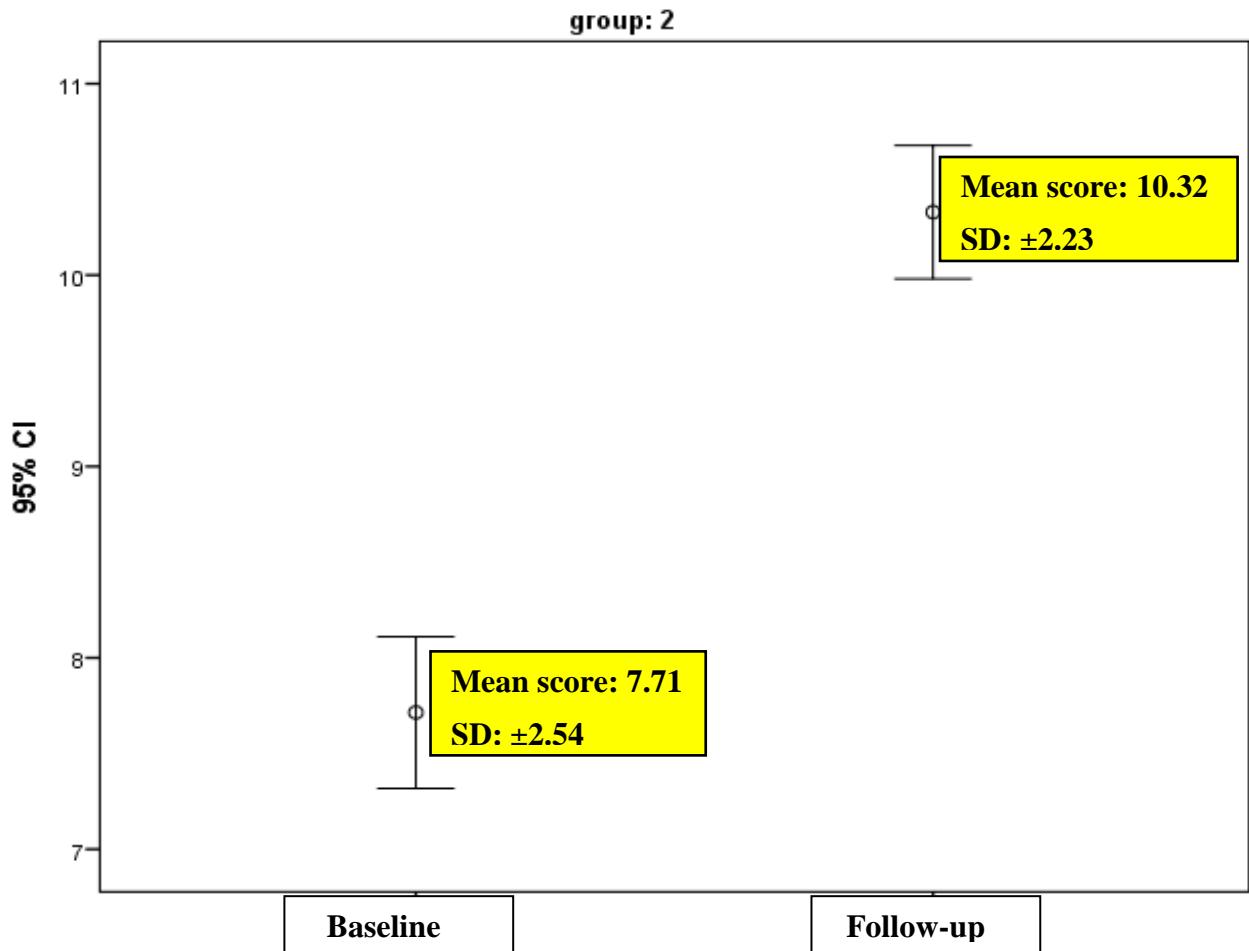
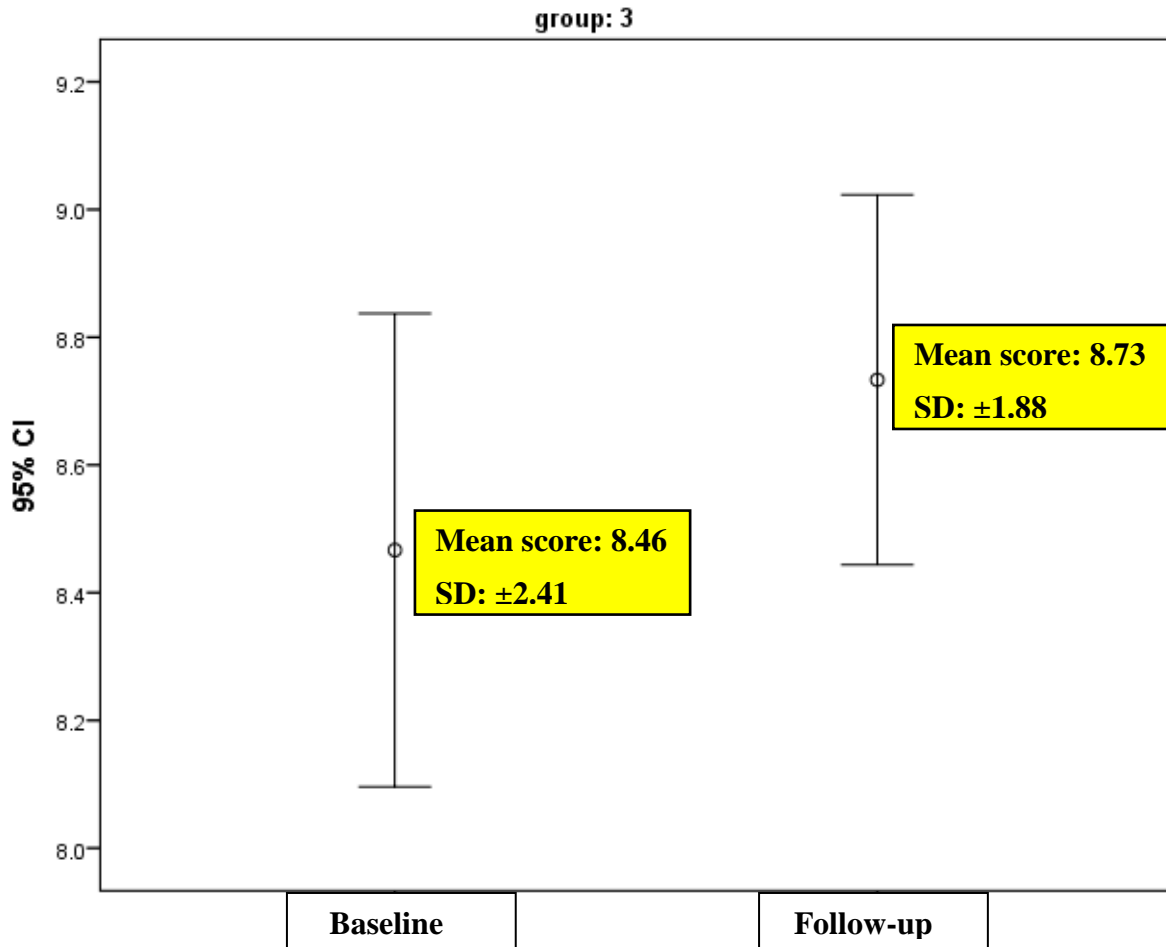


Figure 14C: Comparison of Mean Baseline & Follow-Up Practice Score for Group III



The follow-up Mean Practice scores (SD) were 9.89 (2.19), 10.32 (2.23) and 8.73 (1.88) for groups I, II and III respectively. The Mean scores and its difference are plotted as Error bars with 95% confidence interval in Figure 14A, 14B and 14C for group I, II and III respectively. While comparing the baseline and follow-up, there is increase of Mean Practice score in both group I and II.

Table 13 Comparison of Mean Baseline & Follow-Up Practice Scores and its Significance

Group	Paired Differences					t value	df	Sig. (2-tailed)
	Mean (Baseline – Follow up)	SD	Standard. Error Mean	95% C.I of the Difference				
				Lower	Upper			
I	1.9264	3.4669	.2715	1.3902	2.4626	7.094	162	.000
II	2.6149	3.4965	.2756	2.0707	3.1591	9.489	160	.000
III	.2667	2.5736	.2004	-.1289	.6623	1.331	164	.185

The Mean difference of Practice score and its significance are given in Table 13. On comparing Baseline and Follow-up Mean Practice score, there is a difference in group I & II. Paired t test was done and it shows significant difference ($p < 0.05$) in Practice score in both group I & II. There is no significant difference in group III.

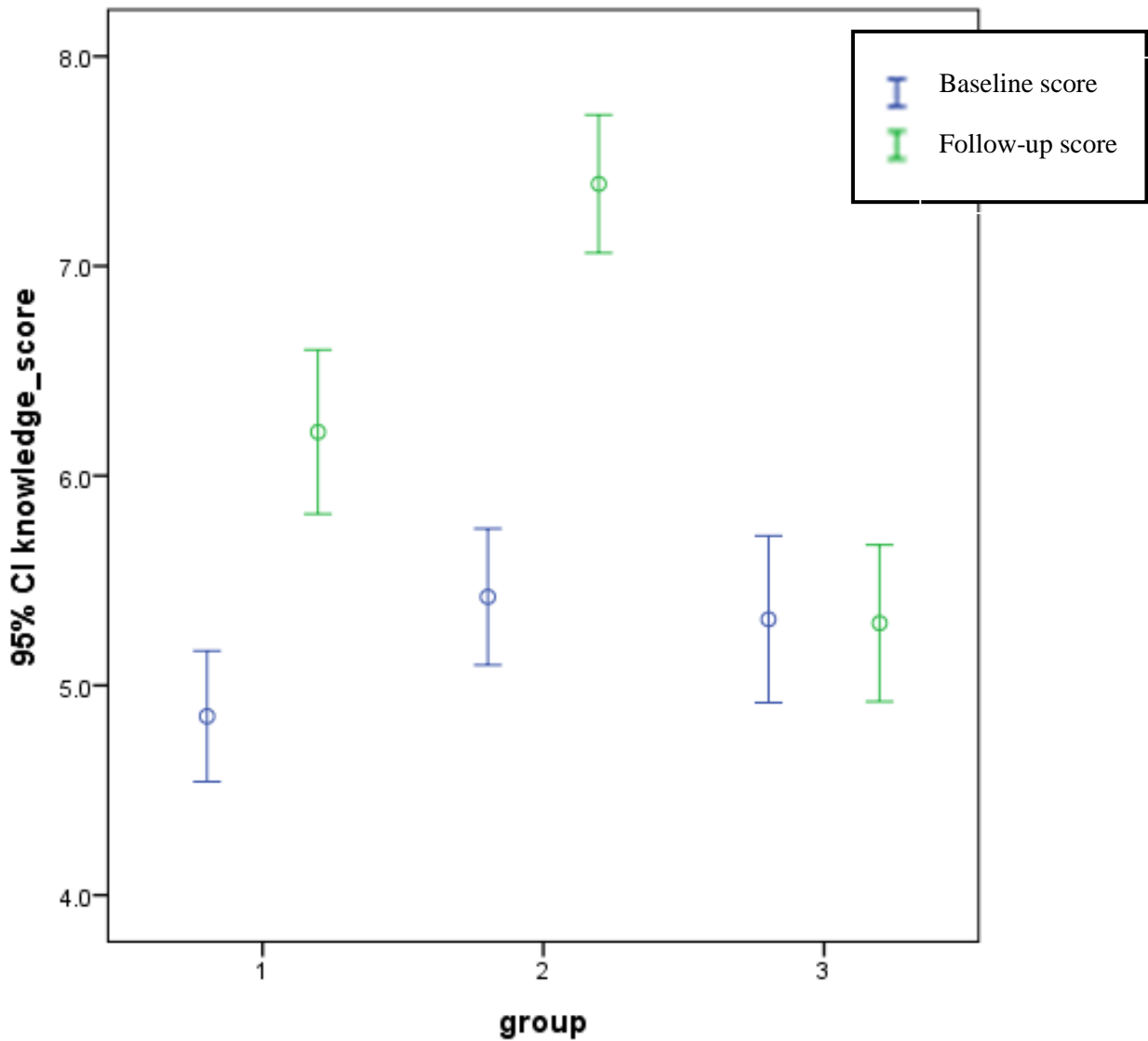
5.7 COMPARISON OF FOLLOW-UP KNOWLEDGE SCORES BETWEEN GROUPS

Table 14 Comparison of Follow – up Knowledge Score between Groups

Follow-up Knowledge score	Mean	SD	F	Sig.
Group I	6.209	2.5300	32.081	.000
Group II	7.391	2.1130		
Group III	5.297	2.4301		

A one-way analysis of variance (ANOVA) was calculated on follow-up knowledge score. The analysis showed significant difference $P < 0.05$ which indicates that there is Mean difference between the three groups in the follow-up scores as given in Table 14.

Figure 15: Comparison of Mean Baseline & Follow-Up Knowledge Scores between Groups



The comparison of Mean Baseline and Follow up Knowledge scores among the groups are plotted as Error bars with 95% confidence interval in Figure 15. While

comparing the baseline and follow-up score among groups, there is increase of scores in both group I and II and no difference in group III.

Table 15: Multiple Comparisons of Knowledge Scores between Groups

Tukey HSD (Honest Significant Difference) test

Dependent Variable	(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Follow up Knowledge Score	1	2	-1.1827*	.2629	.000	-1.801	-.565
		3	.9116*	.2612	.002	.297	1.526
	2	1	1.1827*	.2629	.000	.565	1.801
		3	2.0943*	.2621	.000	1.478	2.710
	3	1	-.9116*	.2612	.002	-1.526	-.297
		2	-2.0943*	.2621	.000	-2.710	-1.478

*. The mean difference is significant at the 0.05 level.

Multiple comparisons Tukey test was used to show whether groups differed from each other in knowledge aspect. It resulted that there is a statistically significant difference in knowledge score between Group I vs Group II ($p=0.001$), Group I vs Group III ($p=0.002$), Group II vs Group III ($p=0.001$). When comparing the mean difference it is evident that knowledge score of Group II is comparatively more than Group I and is given in above Table 15.

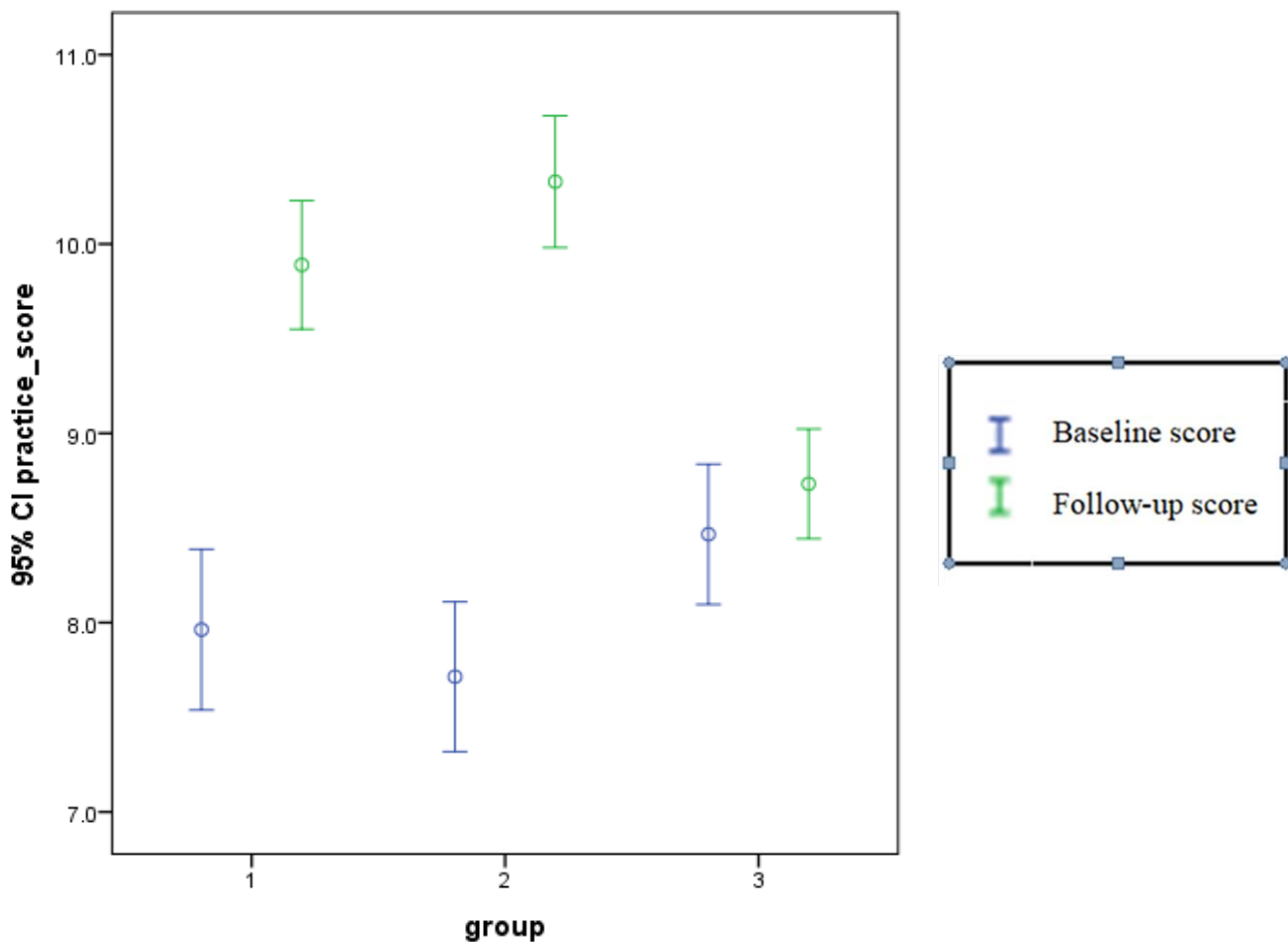
5.8 COMPARISON OF FOLLOW-UP PRACTICE BETWEEN AMONG GROUPS

Table 16: Comparison of Follow – up Practice Score between Groups

Follow-up Practice score	Mean	SD	F	Sig.
Group I	9.89	2.19	24.959	.000
Group II	10.32	2.23		
Group III	8.73	1.88		

A one-way analysis of variance (ANOVA) was calculated on follow-up Practice score. The analysis was significant $P < 0.05$ which indicates that there is Mean difference between the three groups in the follow-up practice scores as given in Table 16.

Figure 16: Comparison of Mean Baseline & Follow-up Practice Scores between groups



The comparison of Mean Baseline and Follow up Practice scores among the groups are plotted as Error bars with 95% confidence interval in Figure 16. While comparing the baseline and follow-up score among groups, there is increase of scores in both group I and II and no difference in group III.

Table 17: Multiple Comparisons of Practice Scores between Groups

Tukey HSD (Honest Significant Difference) test

Dependent Variable	(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Follow-up Practice Score	1	2	-.4396	.2345	.147	-.991	.112
		3	1.1562 [*]	.2330	.000	.608	1.704
	2	1	.4396	.2345	.147	-.112	.991
		3	1.5959 [*]	.2337	.000	1.046	2.145
	3	1	-1.1562 [*]	.2330	.000	-1.704	-.608
		2	-1.5959 [*]	.2337	.000	-2.145	-1.046

*. The mean difference is significant at the 0.05 level.

Multiple comparisons Tukey test was used to show whether groups differed from each other in practice aspect. It showed that there is a statistically significant difference in practice score between Group I vs Group III ($p=0.001$), Group II vs Group III ($p=0.001$). However, there were no differences between the Group I and Group II ($p = 0.147$). When comparing the mean difference it is evident that knowledge score of Group II is comparatively more than Group I and is given in above Table 17.

6 DISCUSSION

The present study aimed

- To assess the effects of health education on Knowledge, Attitudes and Practices regarding menstrual hygiene among study population.
- To compare the relative effects of Direct intervention and Peer led intervention among the study population.

6.1 SOCIO-DEMOGRAPHIC PROFILE OF THE STUDY POPULATION

In the present study, majority of participants (71.3%) were 14 years of age followed by 22.2% & 6.5% of them at 13 & 15 years of age respectively (Table 1). Nearly 80% of girls belonged to nuclear family. This is similar to study done in South India with 88% belonging to nuclear family¹⁷. The highest percentage of them comprised of Hindus (96.1%) which can be attributed to Hinduism being the predominant religion of the country. In the present study 65.6% and 70.3% of participants' mothers and fathers were literate. This result is comparable with literacy rate of Perambalur district given by National Family Health Survey 2015-16 (NFHS-4)⁶³ which is 73.1% and 84.6% for females and males respectively. According to District Census Handbook 2011, about 65.9% women and 82.8% of men were literate in Perambalur district⁶⁴.

Regarding occupation, 77.9% and 89.9% of participants' mother and father were employed. According to 2011 census, 81.9% of females and 87.8% of males were

employed⁶⁴. Socio economic status of the participants was classified based on B.G.Prasad scale. More than half of participants i.e., 59.5% of the study participants belonged to class IV (Lower – middle class) which constitutes the majority. Among the study participants, 45.4% live in kutchha type of house.

6.2 MENSTRUATION AND MENARCHE:

The present study shows that about 56.5% of the girls attained Menarche at 13 years of age. The Mean age at menarche was 12.7 years (± 0.66). In a similar study conducted in Nepal by Manisha Hamal et al., the mean age of menarche was 12.94 years⁶⁵. The study done by Ramachandra et al., showed that the mean age at menarche was 12.39 years (S.D ± 0.908)²⁰ which is similar to present study. About 83.0% of participants had regular cycles and 17% had irregular cycles in present study which is comparable to 76% of participants with regular in a study done at Gujarat by Rana et al.³⁶ Similarly, 76.9% of the participants were having regular pattern of menstruation whereas 23.1% had irregular pattern of menstruation in a study done by Pokrel et al.¹³

Mean duration of menstruation cycle and Mean interval between cycles were 4.71 days (± 1.15) and 29.50 days (± 3.50) respectively and it is equally distributed among all the three groups. In our present study, the source of information regarding menstruation was given by sister (30.3%) followed by aunt and mother. In a similar study done in South India information was given by sister in 25.3%¹⁷. This is in contrast with the study done by Verma et al in Varanasi which showed that mother was source of information for 41.7% of participants followed by friends and sisters⁶⁶.

6.3 KNOWLEDGE REGARDING MENSTRUATION:

When the participants were asked about the menstruation, 53.1% girls responded as physiological process. In a study done at Belgaum, 52.1% of participants responded with similar answer¹³. Similar findings were reported in a study conducted in Zagazig City⁶⁷. About 40.9% of participants responded that menstruation occurs due to hormones in present study. In a study done by Kamath et al, 45.5% of participants answered similarly⁴⁵. About 23.1% of girls responded that blood flows from uterus through vagina in present study which is comparable to 36.0% of girls who answered similarly in a study done by Sapkota et al in rural Nepal. About 29.75% of the respondents correctly reported it as uterus in a study conducted by Pokrel et al¹³.

When questioned whether food will affect menstruation about 54.8% responded with “no” which is almost similar to 65.6% of participants who answered similarly in a study done by Haque et al³. About 60.1% of girls were aware of menstrual hygiene. This is comparable to a study done by Shivaleela et al⁶⁸ in which 75.1% of participants responded similarly. About 24.5% of girls were aware of menstrual hygiene in a similar study done by Tegegne et al⁷. Present study shows that 48.7% of girls were aware that poor hygiene leads to infection which is comparable to a similar study done by Sapkota et al⁶⁹ shows that 37.7% of girls were aware of it. About 68.3% of girls answered similarly in an intervention study done at Bangladesh³. In present study about 32.5% of girls answered correctly when asked about duration of menstruation as 2-7 days. In a similar

study done at Karnataka, 43% of participants had correct knowledge regarding duration of menstrual cycle²⁰.

About 30.8% participants had correct knowledge regarding age at menopause which is similar to 57.7% in a study done at Ghana⁷⁰. About 49.7% of girls responded that menstruation indicates fertility which is similar to 43.0% in a study done by Haque et al³. Mean knowledge scores were found to be 4.85(±2.01), 5.42(±2.08) and 5.31(±2.58) in group I, II and III respectively which is comparable with a mean score of 5.27(± 1.87) in a study done by Anitha et al⁷¹. Another similar result was found in a study done at Karnataka, in which the pretest knowledge mean score was 4.04±1.32⁴².

6.4 ATTITUDE ASPECT:

When asked how they felt at menarche, about 55.0% of participants responded that they were afraid which is similar to many studies as 53% in Nigeria study⁹, 49.6% in Udupi study⁴⁵. When asked about how they feel on missed or delayed periods, about 22.3% responded that they will be happy which is not asked in any other study. About 82.6% of participants said that educating girls regarding menstruation and menstrual hygiene is important. Almost 42% of them said that they are comfortable to discuss these issues with friends. There is no study that has highlighted this component so far.

6.5 MENSTRUAL HYGIENE PRACTICES:

In order to promote personal hygiene among young rural girls, Govt. of Tamil Nadu launched distribution of free sanitary napkins to girls in the age group of 10 to 19 in

all the villages. The beneficiaries include students, lactating mothers and women prisoners^{17,72}. The above government initiative reflects the reasons for complete usage (100%) of sanitary pads menstruation as proved by the results present study highlights the result that 100% of participants. This is similar to a study conducted by Zaidi et al shows 93.8% sanitary pads usage¹⁷. In a study conducted by Bharathalakshmi et al, sanitary pads were used by 90.5% of the study population¹⁴. On contrary, other workers have reported lower usage of sanitary napkins among the adolescent school girl. El Gilany et al. reported that two-thirds of the girls (66.8%) used sanitary pads, while 12% used old pieces of cloth thrown away after use, respectively⁴⁸. Only 49.3% of participants used sanitary napkins and 177 (45.7%) girls used old cloth pieces and 19(4.90%) used new pieces of clothes in a study done by Subash et al⁷³.

In present study, 26.1% girls change pads twice a day and 73.8% girls change it more than thrice a day. About 50.8% and 41.0% of girls responded that they change pads twice and thrice a day in a study done at rural Nepal⁶⁹. In a study done by Patavegar et al, 53.6% and 40.8% of girls change pads twice and thrice a day respectively⁴⁴. Among the study participants, 60.0% of them said that they change pads before sleep which is similar to 68.9% in a study done at Gujarat³⁶. Methods of disposal of used absorbent was questioned and categorised as fair (83.8%) and poor (16.2%) practice. In a Bangladesh study³, 56.5% participants and in a study done by Dasgupta et al¹⁹, 57.5% participants practiced hygienic disposal of used absorbent which is low than present study.

Irregular cleaning of Genitalia was found in 48.7% of participants. Cleaning of the external genitalia was not practiced by 34.32% girls in a study conducted at Newdelhi⁴⁴. A study which was conducted by Subhash B. Thakre et al revealed that 58.09% of the girls unsatisfactorily cleaned their genitalia⁷². About 51.0% of girls wash genitalia with water and soap whereas 33.3% wash with water alone. A study done by Patavegar shows that 47.4% of participants wash their genitalia with water and soap/antiseptic⁴⁴. The Mean practice scores (SD) were 7.96 (± 2.74), 7.71(± 2.54) and 8.46 (± 2.41) for group I, II and III respectively. In a study done at Chennai showed a mean practice score (SD) of 8.22 (± 1.18)⁷¹ and in a study done at Karnataka, the mean practice score was 6.41 \pm 1.65⁴².

6.6 RESTRICTIONS FACED DURING MENSTRUATION:

In the present study 76.7% of girls said that they face restrictions during menstruation. Among them, about 74.6% girls face seclusion which is comparable with 66.0% in study done by Zaidi et al¹⁷. About 67.4% girls were restricted from doing household activity and it is similar to 50.0% in a study done by Shanbag et al⁴². Majority (93.5%) of girls face restriction from entering pooja room/temples which is similar to 98.3% and 100% of participants who were restricted to do religious activity in a study done by Pokrel et al¹³ and Jyotsna Bhudhagaonkar et al³³. About half of the participants said that certain types of foods were restricted which is almost similar to 33.5% in a study done in MadhyaPradesh⁴¹. Almost 3/4th of the girls said that they were made to sleep separately on floor during menstruation with is similar to 64.7% in a study done in South India¹⁷.

6.7 EFFECT OF INTERVENTION ON KNOWLEDGE SCORE:

In present study there is an increase in knowledge in both groups I and II but not much of difference in control group. The percentage of participants with good knowledge has increased by 32.4% and 41.6% in group I and II respectively. A study done at Bangladesh compares shows 31.4% increase in follow-up knowledge score which is similar to the present study but it has only one intervention group³. The post test showed a mean Knowledge score of 6.20 (2.53), 7.39 (2.11) and 5.30 (2.43) for groups I, II and III respectively. The Mean scores have been increased and it has been found to be significant in group I and II. In a study done by Anitha et al the post-test Mean Knowledge score was 8.22 (± 1.18). There are no studies which compares the mean knowledge score for different intervention groups.

6.8 EFFECT OF INTERVENTION ON PRACTICE SCORE:

In the present study, there is an increase in number of participants who had good practice score in all groups but comparatively more in group I & II. The percentage of participants with good practice score has increased by 33.8% and 52.1% in group I and II respectively. A study done by Haque et al compares baseline and follow-up practice score and shows 60.1% increase in good practice score which is similar to the present study but it has only one intervention group³. The follow-up Mean Practice scores (SD) were 9.89 (2.19), 10.32 (2.23) and 8.73 (1.88) for groups I, II and III respectively. While comparing the baseline and follow-up, there is increase of mean Practice score in both group I and II and it is statistically significant. In a study done at Chennai, the post-test mean practice

score (SD) was 9.18 (0.86) which is similar to present study⁷¹. There are no studies which compares the mean practice score for different intervention groups.

6.9 COMPARISON OF FOLLOW-UP KNOWLEDGE & PRACTICE BETWEEN GROUPS

ANOVA test was done which showed significant difference in follow up knowledge and practice score in group I and II. In order to compare the relative effects of intervention among the groups, Post - hoc analysis was done using Tukey HSD (Honest Significant Difference). This provides multiple comparisons between groups. Group II which is a direct intervention group showed significant change in both knowledge and practice score when compared to other groups. There are many studies which has shown the impact of educational intervention on menstrual hygiene but comparison of direct and peer-led intervention is scanty^{3,10,13}. There is a Nigerian study which evaluates the school based education involving teacher-led and peer-led intervention but on reproductive health only⁷⁴. In present study, Direct intervention group showed more significant change owing to more pictorial demonstration directly to the students. And moreover Peer led intervention also has showed improvement but less than direct intervention. Reasons can be attributed to shyness and inability to carry all the message to their peers.

7 CONCLUSION

The health of adolescent girl has always been an important social goal of all societies. Over the years, Adolescent health has evolved through various stages. By improving adolescent girl's health we can render a healthy population.

The findings led to the conclusion that the students have deficient knowledge, various misconceptions and inadequate practices regarding menstruation and its management at baseline assessment. The positive results of this study demonstrate the feasibility of implementing a health education programme on menstrual hygiene at schools especially age group of 13, 14 and 15 years. The intervention produced significant positive changes in Knowledge and Menstrual hygiene practices among both peer led and direct intervention group. This concludes that educational intervention can bring about many changes in a less discussed topic like menstruation.

An important finding of this study was that sanitary napkins were used by all study participants which was the reason of better menstrual hygienic practices among them. Programme for providing free sanitary pads to be implemented country wide to provide our adolescent girls with a better menstrual experience and hygiene. Menstrual issues should be addressed at younger age itself to reduce the sufferings of adolescent girls. This will ensure the health of the girls, which can be regarded as the index of a healthy society. More intense or longer interventions may be needed to significantly improve good menstrual hygiene practice in this population.

8 RECOMMENDATIONS

1. Taking into account the health implications and prevailing socio-cultural and economic factors, effective strategies should be implemented to persuade adolescent school girls to adopt healthy menstrual practices.
2. A well-informed continuous, school education programme should be delivered to students at early age itself.
3. Information on safe hygiene and sanitary practices should be included in the school curriculum, and that there should be better communication between female students and their teachers, and between daughters and mothers.
4. It is important to impart such education to the teenage girls and teachers, extending it to their family members, especially mothers, will be a blessing in disguise.
5. To encourage adolescent girls to attend awareness program conducted at Primary Health Centers and adolescent clinics.
6. Further studies on involving Teacher led education on Menstrual hygiene can be done and compared with peer group intervention.
7. A qualitative research involving Focus Group Discussions (FGD) can be conducted to understand the attitude of girls regarding Menstruation.

9 LIMITATIONS

1. The present study was not able to include Teacher led intervention as many teachers were not willing.
2. Comparison of urban and rural schools has not been done owing to only one Government schools in urban Perambalur.
3. Only Government schools were included in the study as permission from private schools could not be obtained.

ANNEXURE I - REFERENCES

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ANNEXURE II (a) – Ethical clearance certificate

DHANALAKSHMI SRINIVASAN MEDICAL COLLEGE AND HOSPITAL
SIRUVACHUR, PERAMBALUR – 621113, Tamilnadu, India.

Institutional Ethics Committee (Human Study) -IECHS

Document - 11

Date: 19-12-2015

No. IECHS/DSMCH/017/Version_1

No. IRCHS/DSMCH/020

CERTIFICATE OF ETHICS APPROVAL

This is to certify that, the VERIFIED DISSERTATION PROJECT No.

IECHS/DSMCH/017/Version_1 entitled “**The effect of school based health education regarding menstrual hygiene – an intervention study among adolescent girls**

of Perambalur district”, submitted by **Dr. K. Logeswari, Postgraduate student,**

Community Medicine, Dr. Sati Prasad Sinha (Guide), Professor, Community Medicine, is

APPROVED by the Institutional Ethics Committee (Human Studies), at its meetings held on

18-12-2015, and decision taken by all the IECHS members as per the Standard Operating

Procedures of the IECHS as well as various Ethical Guidelines, and Certificate of Ethics

Approval to be issued to the Principal Investigator, with advise to the PI that, **If any**

modification on the Verified and Approved Dissertation Protocol done by the Principal


investigator, it will be mandatory to submit the modified details WITHIN SEVEN DAYS to


the IEC (Institutional Ethics Committee) and IRC (Institutional Research Committee)

both, and if you get clearance regarding modified protocol, then you will be authorized to

continue the Research work. The IECHS has right to give a letter to stop/terminate this study

any time.

Signature 
Member Secretary
Institutional Ethics Committee on
Human Studies (IECHS)

Signature 
Chairman
Institutional Ethics Committee on
Human Studies (IECHS)

Name: Dr. Suresh Kumar Boudh

Date: 20-12-2015

Name: P. DHARMALATHI/LOWNDU SUBRAMANIAM

Date: 20/12/2015

Copy to:

*Principal Investigator. *Member Secretary, IRCHS. *Office copy of the IECHS.

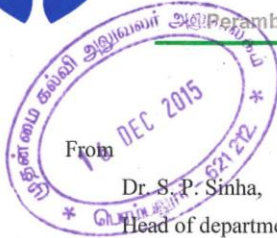
ANNEXURE II (b) – Permission Letter



Dhanalakshmi Srinivasan Medical College & Hospital

Perambalur - 621 212, Tamil Nadu, India.

04/12/2015



From
Dr. S. P. Sinha,
Head of department,
Department of Community Medicine,
Dhanalakshmi Srinivasan Medical College and Hospital,
Siruvachur, Perambalur.

Through
THE DEAN,
Dhanalakshmi Srinivasan Medical College and Hospital,

To
The Chief Educational Officer,
Perambalur District,
Perambalur.

Respected sir,

Subject: Requesting permission to allow us to give health education to school going adolescent girls of Perambalur District regarding menstrual hygiene.


I Dr. S. P. Sinha, HOD Department of Community Medicine and my student Dr. K. Logeswari who is pursuing 1st year, would like to do dissertation on "The effect of school based health education regarding menstrual hygiene - an intervention study among adolescent girls of Perambalur District". For this we consider schools in Perambalur district will be appropriate center. I request you to kindly permit her for the following activities.

1. To assess the level of awareness of students about menstruation and menstrual hygiene.
2. To educate the students of grade 8 and 9 regarding menstrual hygiene and assess whether the same was beneficial to them.


Thanking you

04/12/2015

Perambalur


DEAN
DEAN
Dhanalakshmi Srinivasan
Medical College Hospital,
Siruvachur, Perambalur - 621 212.

Permitted
Dr. S. P. Sinha
for
Chief Educational Officer
Perambalur - 621 212


(Dr. S. P. Sinha)
Professor H.O.D., Community Medicine
DSMCH, Perambalur

ANNEXURE III (a) - CONSENT FORM (English)

Project No 020

PARTICIPANT INFORMATION SHEET & INFORMED CONSENT FORM

INTRODUCTION:

You are requested to allow your daughter miss. _____ to participate in this questionnaire study which is going to be conducted in school premises, titled, **“The effect of school based health education regarding menstrual hygiene - an intervention study among adolescent girls of Perambalur district.”**

Your child’s participation in this study is voluntary. You have liberty to allow your child to participate or withdraw from the study. Please read this consent form carefully and ask the Consultant, any questions you may have about the study before signing.

EXPLANATION OF THE QUESTIONNAIRE STUDY:

In this study, we will ask your child to answer few questions given in the questionnaire and collect relevant information. To avoid changes in the results questionnaire cannot be given prior, but any queries will be addressed immediately. Following this health education regarding menstruation and menstrual hygiene will be delivered to your child. Again a questionnaire will be given to her and she will be asked to answer it. Data from the study will be used for research purpose only. The results of the study will not be given to you directly.

POTENTIAL BENEFITS:

Her participation will help us to know the potential aspects of the problem under study and results of this study will be beneficial for future generations and the stake holders for decision making. She will be benefited as she would be given health education regarding menstruation and menstrual hygiene.

ASSURANCE OF CONFIDENTIALITY:

The information concerning your child’s participation in the study will be kept confidential to the full extent permitted by law and used only for scientific purpose.

No one except members of the research team will have access to the results. Your child's name will not be disclosed in any report or released in any way. A copy of this will be given to you.

PARENT/ GUARDIAN CONSENT:

I have read the explanation about this study in my vernacular/ English language and have been given the opportunity to discuss it and to ask questions. I have not received money from the research team to participate in this study. I am willing to allow my child to participate in this study.

Signature of parent/ guardian:

Name:

Relation with the participant:

Address:

Contact No:

Date:

Signature of Witness:

Name:

Relation with the participant:

Address:

Contact No:

Signature of Researcher:

Name:

ANNEXURE III (b) - CONSENT FORM (Tamil)

பங்குபெருவோரின் தகவல் அறிவிப்பு மற்றும் ஒப்புதல் படிவம்

“பெரம்பலூர் மாவட்டத்தின் வளரும் மங்கையரின் மாதவிடாய் சுகாதாரம் பற்றிய பள்ளிச்சார்ந்த விழிப்புணர்ச்சி அளிக்கும் ஆராய்ச்சி”

இந்த ஆராய்ச்சியைப் பற்றிய அனைத்து விபரங்களும் எனக்கும் எனது மகளுக்கும் எனது தாய்மொழியான தமிழில் முழுமையாக விளக்கப்பட்டுள்ளது. இதில் என் மகள் சுய விருப்பத்தோடு பங்கு பெரலாம் என்பதை அறிவேன். இவ்வாராய்ச்சியை முழுமையாக புரிந்துகொண்டேன் என்றும் இவ்வாராய்ச்சியைப் பற்றிய கேள்விகளை எழுப்புவதற்கும் எனக்கு தகுந்த வாய்ப்பளிக்கப்பட்டது என்று உறுதி அளிக்கிறேன். இந்த ஆராய்ச்சியிலிருந்து எப்போது வேண்டுமானாலும் விலகிக்கொள்ளலாம் என்றும் புரிந்துகொண்டேன். இந்த ஆராய்ச்சியில் என் மகளிடம் மாதவிடாய் சுகாதாரம் பற்றி சில கேள்விகள் கேட்கப்படும், பிறகு மாதவிடாய் சுகாதாரம் பற்றிய விழிப்புணர்ச்சி வழங்கப்படும் என்றும் நான் புரிந்துகொண்டேன். என் மகள் கூறும் தகவலை இரகசியமாக வைப்பதாகவும் மேலும் அவளுடைய பெயரை கண்டிப்பாக ஆராய்ச்சியின் அறிக்கையில் வெளியிடமாட்டேன் என்றும் ஆராய்ச்சியாளர் உறுதி அளித்துள்ளார். ஆராய்ச்சியின் முடிவுகளை அறிவியலின் முன்னேற்றத்திற்காக பயன்படுத்துவதற்கு எந்தவித தடையும் ஏற்படுத்தமாட்டேன் என்றும் உறுதியளிக்கிறேன். ஆராய்ச்சியில் என் மகள் களந்து கொள்ள ஆராய்ச்சிக்குழுவிடம் பணம் எதுவும் வாங்கவில்லை, முழுசும்மதத்துடன் ஒத்துழைப்பேன்.

பெற்றோர் கையொப்பம்

பெயர்:

முகவரி:

தொலைப்பேசி எண்:

தேதி:

ஆசிரியர் கையொப்பம்

பெயர்:

தொலைப்பேசி எண்:

ஆராய்ச்சியாளரின் கையொப்பம்

ANNEXURE IV (a) - QUESTIONNAIRE (English)

S.No:

“THE EFFECT OF SCHOOL BASED HEALTH EDUCATION REGARDING MENSTRUAL HYGIENE - AN INTERVENTION STUDY AMONG ADOLESCENT GIRLS OF PERAMBALUR DISTRICT.”

Questionnaire

(KINDLY TICK WHEREVER OPTIONS ARE GIVEN)

GENERAL INFORMATION

1. What is your age (completed years) _____
2. Type of family – Nuclear(1)/ joint(2) []
3. Number of family members–
4. Number of siblings-
5. Religion- Hindu(1)/ Muslim(2)/ Christian(3)/ Others(mention_____) []
6. Education of mother- []
Illiterate(1)/ primary(2)/ secondary(3)/ graduate and above(4)
7. Education of father- []
Illiterate(1)/ primary(2)/ secondary(3)/ graduate and above(4)
8. Fathers occupation-
9. Mothers occupation-
10. Monthly family income: _____
11. House type- Pakka(1)/ Half-pakka (2)/ Kacha(3) []

(Pakka means brick-built, half-pakka means only the floor is made of brick, and kacha means no brick was used to construct the house.)

MENARCHE DETAILS:

1. At what age did you attain menarche? _____
2. What is the duration of your menstrual cycle? _____
3. What is the interval between menstrual cycles? _____
4. Who was your source of information during menarche? _____

KNOWLEDGE AND BELIEFS ABOUT MENSTRUATION

1. Menstruation is a- []
Physiological process(1)/ disease(2)/ sin(3)/ don't know(4)
2. What is the cause of menstruation? []
Hormones (1)/ disease(2)/ sin(3)/ don't know(4)

3. From where does the menstrual blood flow? []
 Uterus(1)/ Vagina(2)/ Bladder(3)/ Abdomen(4)/ don't know(5)
4. Do food habits affect menstrual cycle? YES(1)/NO(2) []
5. Have you heard about menstrual hygiene? YES(1)/NO(2) []
6. Poor menstrual hygiene practices leads to infections? YES(1)/NO(2) []
7. What is normal monthly duration of menstruation? _____
8. What is the normal interval between two menstrual cycles? _____
9. At what age does normal cessation of menstruation occurs? _____
10. Does menstruation indicate fertility? YES(1)/ NO(2)/ don't know(3). []

ATTITUDE ASPECT

1. What was your reaction to menstruation? []
 Scared(1)/ embarrassed(2)/ guilty(3)/ no reaction(4).
2. How do you feel when you don't get your periods? []
 Happy(1)/ scared(2)/ worried(3)/ no reaction(4).
3. Is it better to know about menarche earlier? YES(1)/NO(2) []
4. Do you think educating girls about menarche is important? YES(1)/NO(2) []
5. To whom are you comfortable to discuss menstrual issues? _____

PRACTICES RELATED TO MENSTRUAL HYGIENE

1. What absorbent do you use during menstruation? []
 Sanitary pad(1)/ New cloths(2)/ Old cloths(3)If others, mention _____
2. How many times do you change pad/cloths per day? _____
3. Do you change pad/cloth before sleep? YES(1)/NO(2) []
4. If you are using cloth or absorbent (re-usable), How do you dry it? []
 Outside room in sunlight(1)/ Inside room with sunlight(2) / Without
 sunlight(3) /Not using reusable absorbent(4).

5. If you use clothes where and how do you store it?]
 Clean and covered place(1)/ Clean and open space(2)/ Unclean
 place(3)/ not using reusable absorbent(4).
6. How do you dispose your sanitary pads?]
 Buried(1)/ burned(2)/ dustbin(3)/ latrine(4)/ throw on road(5)
7. When do you clean your genitalia?]
 Every time use toilet(1)/ during bathing(2)/ Do not clean regularly(3)
8. Material used for cleaning of external genitalia]
 Water and antiseptic(1)/ Soap and water(2)/ Only water(3)/ not
 cleaning regularly(4)

RESTRICTIONS DURING MENSTRUATION

1. Have you been restricted during your menstruation? YES(1)/NO(2)]
 (If yes, tick options below)
- Seclusion]
- Separate utensils/plates]
- Cooking/going and working in kitchen]
- Praying/ going to Pooja room/temple]
- Avoiding certain foods]
- Attending school]
- Playing or doing exercise/routine household works]
- Visit relatives, friends and neighbors]
- Should use empty floor/separate place or mat for sleep]
- Should wash her clothes,utensils and mat separately]

Thank you

ANNEXURE IV (b) - QUESTIONNAIRE (TAMIL)

**பெரம்பலூர் மாவட்டத்தின் வளரும் மங்கையரின்
மாதவிடாய் சுகாதாரம் பற்றிய பள்ளிச்சார்ந்த
விழிப்புணர்ச்சி அளிக்கும் ஆராய்ச்சி**

வினாவரிசை

பொது தகவல்

1. உங்களின் வயது என்ன? _____
2. உங்களின் குடும்ப வகை என்ன? தனிகுடும்பம்(1)/ கூட்டுக்குடும்பம்(2) []
3. குடும்ப நபர்களின் எண்ணிக்கை? _____
4. உங்களின் மதம் என்ன? இந்து(1)/ முஸ்லிம்(2)/ கிறிஸ்துவர்(3) []
(மற்றவை என்றால் குறிப்பிடுக _____)
5. தாயின் கல்வி தகுதி என்ன? []
படிக்கவில்லை(1)/ 5 வது வரை(2)/ 12 வரை(3)/ பட்டப்படிப்பு(4)
6. தந்தையின் கல்வி தகுதி என்ன? []
படிக்கவில்லை(1)/ 5 வது வரை(2)/ 12 வரை(3)/ பட்டப்படிப்பு(4)
7. தாயின் தொழில் என்ன? _____
8. தந்தையின் தொழில் என்ன? _____
9. குடும்பதின் மாத வருமானம் என்ன? _____
10. உங்கள் வீட்டின் வகை என்ன? மாடிவீடு(1)/ ஒட்டுவீடு(2)/ குடிசைவீடு(3) []

பருவம் அடைந்த விவரம்

1. நீங்கள் எந்த வயதில் பருவமடைந்தீர்கள்? _____
2. உங்கள் மாதவிடாய் சூழற்சி கால அளவு என்ன? _____
3. உங்கள் மாதவிடாய் சூழற்சி இடையே இடைவேளி என்ன? _____
4. பருவமடைந்த பொழுது அதை குறித்து உங்களுக்கு விளக்கியவர் யார்?

மாதவிடாய் பற்றிய அறிவு

1. மாதவிடாய் என்பது? []
உடலியல் செயல்(1)/ நோய்(2)/ பாவம்(3)/ தெரியவில்லை(4)
2. மாதவிடாய் ஏற்படுவது எதனால்? []
உடலியல் செயல்(1)/ நோய்(2)/ பாவம்(3)/ தெரியவில்லை(4)
3. மாதவிடாய் இரத்தஓட்டம் எங்கிருந்து வருகிறது? []
கர்ப்பப்பை(1)/பிறப்புறுப்பு(2)/ சிறுநீர்ப்பை(3)/
வயிற்றுப்பகுதி(4)/தெரியவில்லை(5)
4. உணவு பழக்கங்கள் மாதவிடாயினை பாதிக்கும் []
ஆம் (1)/இல்லை (2)
5. மாதவிடாய் சுகாதாரம் பற்றி தெரியுமா? ஆம்(1)/இல்லை(2) []
6. மாதவிடாய் சுத்தமின்மை தொற்று நோயினை விளைவிக்கும். []
ஆம்(1)/ இல்லை(2)
7. சராசரியாக சிரான மாதவிடாய் சூழற்சி கால அளவு என்ன? _____
8. சராசரியாக மாதவிடாய் சூழற்சி இடையே உள்ள இடைவேளி என்ன? _____
9. எந்த வயதில் மாதவிடாய் நின்று போகும்? _____
10. மாதவிடாய் என்பது கருவுறுதல் வளத்தை சுட்டிக் காட்டுகிறதா? []
ஆம்(1)/ இல்லை(2)/ தெரியவில்லை (3)

அணுகுமுறை பற்றிய அம்சங்கள்

1. பருவமடைதலின்போது உங்களின் மன்நிலை என்ன? []
பயமடைந்தீர்கள்(1)/ சங்கடப்பட்டீர்கள்(2)/ குற்ற
உணர்வு(3)/ எதுவுமில்லை(4)
2. மாதவிடாய் வரவில்லை என்றால் உங்களின் உணர்வு எப்படி இருக்கும்? []
சந்தோஷம்(1)/ பயம்(2)/ கவலையாகஇருக்கும்(3)/ எதுவுமில்லை(4)

3. பருவமடைவதற்கு முன்னரே அதைப் பற்றி அறிந்து கொள்வது நல்லதா? []
ஆம் (1)/இல்லை (2)

4. மாதவிடாய் பற்றிய கல்வி பெண்களுக்கு அவசியமா? []
ஆம் (1)/இல்லை (2)

5. மாதவிடாய் பற்றிய விபரங்களை யாருடன் பகிர்ந்து கொள்ள
விரும்புவீர்கள்? _____

செயல்பாடுகள்

1. மாதவிடாயின் பொழுது இவற்றில் எதனை பயன்படுத்துவீர்கள்? []
பேட் (1)/ புதிய துணி (2)/ பழைய துணி (3)
(மற்றவை என்றால் குறிப்பிடுக _____)

2. ஒரு நாளில் எத்தனை முறை இவற்றை மாற்றுவீர்கள்? _____

3. தூங்குவதற்குமுன் நாப்கின்/துணியை மாற்றுவீர்களா? []
ஆம் (1)/ இல்லை (2)

4. பயன்படுத்திய துணிகளை எவ்வாறு காய வைப்பீர்கள்? []
வெட்டவெளி சூரிய ஒளி(1)/ அறைக்குள் சூரிய ஒளி(2)/ சூரிய ஒளி
இல்லாமல்(3)/ துணி பயன்படுத்தவில்லை(4)

5. இவ்வாறு பயன்படுத்திய துணிகளை எங்கே, எப்படி வைப்பீர்கள்? []
தூய்மையான மூடிய இடம் (1)/ தூய்மையான மூடப்படா இடம் (2)/
தூய்மையற்ற இடம் (3)/ துணி பயன்படுத்தவில்லை (4)

6. உபயோகப்படுத்தின நாப்கினை எவ்வாறு அகற்றுவீர்கள்? []
புதைத்தல் (1)/ எரித்தல் (2)/ குப்பைத்தொட்டியில் எரிதல்
(3)/கழிப்பிடத்தில் எரிதல் (4)/ சாலையில் எரிதல் (5)

7. புற உறுப்பினை எப்போது சுத்தம் செய்வீர்கள்? []
ஒவ்வொரு முறை கழிப்பிடம் செல்லும் போது (1)/ குளிக்கும்போது (2)/
தினந்தோறும் சுத்தம் செய்வதில்லை (3)

8. புற உறுப்பினை எதைகொண்டு சுத்தம் செய்வீர்கள்? []
நீர் மற்றும் டெட்டால்(1)/ நீர் மற்றும் சோப்(2)/ நீர் மட்டும்(3)/
சுத்தம்செய்வதில்லை(4)

மாதவிடாயின் பொழுது வரையறை

1. மாதவிடாயின் பொழுது வீட்டில் ஏதேனும் கட்டுப்பாடுகள் உண்டா?

ஆம்(1)/ இல்லை(2)

[]

ஆம் என்றால் பின் வருவனவற்றில் எவை என்று குறிப்பிடுக

- தனிமைப்படுத்துதல்/ ஒதுக்கிவைப்பு/ தீண்டாமை []
- உண்ண தனி தட்டு மற்றும் பாத்திரம் []
- சமைக்க தடை/ சமையல் அறை செல்ல தடை []
- சாமி கும்பிட தடை/ கோவில் அல்லது புறஜ அறை செல்ல தடை []
- சில வகை உணவுகள் சாப்பிட தடை []
- பள்ளிக்குடம் செல்ல தடை []
- விளையாட/தினசரி வேலை செய்ய தடை []
- பக்கத்து/ உறவினர் வீட்டிற்கு செல்ல தடை []
- தனி இடம்/ தறையில்/ தனி பாயில் தான் தூங்க வேண்டும் []
- நீங்களே உங்கள் பாய்/ துணிகளை/ பாத்திரங்களை சுத்தம் செய்ய வேண்டும். []

[]

பதில் அளித்தமைக்கு நன்றி

ANNEXURE V - PRE & POST TEST SESSIONS



INTERVENTION SESSIONS



GANTT CHART

STUDENT YEARS	1						2						3														
CALENDAR YEAR	2015						2016						2017														
MONTHS	6	7	8	9	10	11	1	2	3	4	5	6	7	8	9	10	11	1	2	3	4	5	6	7	8	9	10
REVIEW OF LITERATURE																											
PROTOCOL & IEC MATERIAL PREPARATION																											
IRCHS & IECHS APPROVAL																											
DATA COLLECTION :																											
➤ PRETEST																											
➤ INTERVENTION PERIOD																											
➤ POSTTEST																											
DATA ENTRY																											
DATA ANALYSIS																											
DISSERTATION WRITING & SUBMISSION																											

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TITLE OF THE STUDY- THE EFFECT OF SCHOOL BASED HEALTH EDUCATION REGARDING MENSTRUAL HYGIENE - AN INTERVENTION STUDY AMONG ADOLESCENT GIRLS OF PERAMBALUR DISTRICT 1 INTRODUCTION The World