"KNOWLEDGE, BELIEF AND PRACTICE REGARDING REPRODUCTIVE HEALTH AMONG LATE ADOLESCENT GIRLS IN AN URBAN AREA OF BELGAUM"

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Dr. S. M. KATTI M.D.,
Professor and Head,
Department of Community Medicine
J. N. Medical College,
Belagavi – 590010
Karnataka, India.

Date: . 10. 2015

Place: Belagavi

Dr. N. S. Mahantshetti M.D.,
Principal,
J. N. Medical College,
Belagavi – 590010
Karnataka, India.

Date: . 10. 2015

Place: Belagavi

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LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
AEP	Adolescent Education Programme
AFHS	Adolescent Friendly Health Services
AHI	Adolescent Health Initiative
ART	Anti Retroviral Therapy
EEG	Electroencephalogram
FOGSI	Federation of Obstetrics and Gynaecology Society of India
HIV	Human Immunodeficiency Virus
ICDS	Integrated Child Development Service
Kg	Kilogram
MRI	Magnetic Resonance Imaging
MDG	Millennium Development Goal
RKSK	Rashtriya Kishor Swasthya Karyakram
RCH	Reproductive and Child Health
RTI	Reproductive Tract Infection
SAEP	School AIDS Education Programme
SRH	Sexual and Reproductive Health
STI	Sexually Transmitted Infection
UTI	Urinary Tract Infection
WHO	World Health Organization
$\chi 2$	Chi – square test

ABSTRACT

Background and Objective

The entire period of transition from childhood to adulthood is considered as adolescence. Reproductive health, in particular, represents the most critical area which is an umbrella concept, consisting of several distinct, yet related issues such as abortion, child birth, sexuality, contraception and maternal mortality. Most adolescents go through adolescence with little or no knowledge of the body's impending physical and physiological changes especially in Indian context, where discussion about sexuality with young children is almost absent. Thus this study was planned with the objective of assessing the knowledge, belief, and practice regarding the reproductive health among late adolescent girls.

Methodology

A community based cross sectional study was undertaken over a period of one year, in Ashoknagar which is an urban field practice area of J. N. Medical College, Belagavi. A total of 625 late adolescent girls between 16 - 19 years were studied. After obtaining the ethical clearance, pilot study was conducted. Written informed consent was obtained from every participant. Data was collected by house to house visit using a predesigned questionnaire, which included socio-demographic variables, knowledge, belief and practice regarding menstruation, contraception, pregnancy, abortion, RTIs and HIV/AIDS. Statistical analysis was done using percentages and chi square test and 'p' value less than 0.05 was considered significant.

Result

The mean age (±SD) of the study participants was 17.4±1.09 years. The mean age (±SD) at menarche was 12.8±1.73 years. Majority, 79.0% of the adolescents knew that menstruation was a natural cyclical process. Among the 66.6% adolescent girls, who were aware about menstruation before menarche, the major source of information was mother (44.5%). About 68.2% and 58.1% of the girls knew one or more than one method of contraception and symptom of RTI respectively. Nearly half, 50.7% and 45.6% of adolescents correctly knew the full form of HIV and AIDS. Most of the girls (72.3%) believed that the sex education should be provided in high schools and only 12.5% correctly believed that only husband was responsible for the sex of the child. Less than half, 43.4% of the adolescent girls used sanitary pads and around 52.8% of the girls practiced cleaning of external genitalia during menstruation. About 54.4% and 84.0% of girls sought treatment for their menstrual problems and RTIs respectively. Though increase in correct knowledge regarding menstruation lead to increase in correct practice and right belief but there was a gap in knowledge, belief and practice among adolescent girls. Factors like age, religion, socio-economic status and mothers' literacy were significantly associated both with the use of sanitary pads and practice of perineal hygiene.

Conclusion

Our study reported good knowledge level and also few misconceptions and wrong beliefs regarding reproductive health among adolescent girls. Less than half of the adolescent girls used sanitary pads and about more than half of the girls practiced perineal hygiene. Treatment seeking practices for menstrual problems and RTIs was on the better side, but specialist care was sought by very few of them. There was a

gap in knowledge, belief and practice among adolescent girls which needs to be addressed. Appropriate health education programmes and social marketing of sanitary pads may lead to better hygiene practices among adolescents.

Keywords: Reproductive Health, Adolescent girls, Urban area, Knowledge.

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INTRODUCTION

Adolescence is inherently a time of "storm and stress" when all young people go through some degree of emotional and behavioural upheaval before establishing a more stable equilibrium in adulthood.

- G. Stanley Hall

The term adolescence meaning "to emerge" or "achieve identity" is a relatively new concept, especially in development thinking. The origins of the term from the Latin word, 'adolescere' meaning "to grow, to mature" indicate the defining features of adolescence. However, a universally accepted definition of the concept has not been established. The entire period of transition from childhood to adulthood is considered as adolescence. This critical period of transition is identified by a range of ages. It is defined by the World Health Organization (WHO) as period between 10-19 years. It marked by enhanced food requirement and basal metabolic and biochemical activities, endogenous processes like hormonal secretions with their influence on the various organ systems. As direct reproducers for future generations, the health of adolescent girls influences not only their own health, but also the health of future generation. Adolescents are not a homogenous group. Their situation varies by age, sex, marital status, class, region and cultural context. This calls for interventions that are flexible and responsive to their needs.

Some of the public health challenges for adolescents include pregnancy, excess risk of maternal and infant mortality, sexually transmitted infections (STI), reproductive tract infections (RTI), and the rapidly rising incidence of Human Immunodeficiency Virus (HIV) infection in this age group. Reproductive health, in

particular, represents the most critical area where an emphasis on the special needs and concerns of adolescents is required. It is an umbrella concept, consisting of several distinct, yet related issues such as abortion, child birth, sexuality, contraception and maternal mortality. Reproductive morbidities such as dysmenorrhoea, pre-menstrual syndrome, irregular menses, excessive bleeding during menstruation etc. are common in adolescent girls. In spite of this, health care seeking for reproductive morbidities is very low. Most of the adolescent girls remain silent without seeking health care. If these are not treated early, they could lead to various reproductive disabilities.[1] While there is growing recognition of the need for action to promote adolescent reproductive health, work done in this regard is often piecemeal. Also in the Indian context, adolescent girls enter into reproductive life, with early marriage, pregnancies and child bearing resulting in detrimental effects to their general and reproductive health.[2]

The age of menarche has decreased significantly over time with improved health and nutrition. In the 1400s, the age at menarche was close to the age at marriage, both of which were approximately 18 years. The current age of menarche is 12.6 years leaving a significant gap between menarche and time of marriage making it difficult to delay sex until marriage thereby exposing the adolescents to a possible risk of unsafe sex and STIs.[3]

A study revealed that majority of girls had no knowledge of menstruation. In most cases, their mothers were the only source of information. Most girls perceived menstruation as disgusting and a curse.[4] Though menstruation is a normal physiological process, it is often not discussed openly in our society, considering menstruation to be inconvenient or embarrassing topic to discuss. Menstrual practices

are still shrouded by taboos and socio-cultural restrictions. Thus adolescent girls remain ignorant of the scientific facts and hygiene practices which sometimes result into adverse health consequences. Onset of puberty decreases autonomy and mobility, with increasing restrictions on speech, appearance, conduct and interaction with the opposite sex. Girls inherit their mother's domestic chores and adopt stereotypical gender roles. Low self-esteem and self-worth are common. Thus girls enter into "culture of silence." Adolescent girls are also at higher risk of psychosocial stress because of gender discrimination.[5] Discrimination against the girl child in health, nutrition and education is relatively heightened in adolescence.

High rates of adolescent childbearing found in South and South-West Asia were obviously related with early age at marriage. Bangladesh had one of the highest levels of adolescent childbearing, followed by Nepal and India.[6]

Adolescent fertility rates contributed 17% to the total fertility rate in India and about 14% of births in women aged below 20 were unplanned.[7] Despite the fact the present law in India envisages marriage of girls above the age of 18 years, early marriages are common in India. About 46% of girls get married below the legal age of marriage and 16% of women in the age group of 15 to 19 years become pregnant.[8] Early and unplanned adolescent pregnancies are highly prone for adverse pregnancy outcomes like eclampsia, low birth weight, early neonatal death and congenital malformations.[9]

Contraception is a pillar in reducing adolescent pregnancy rates. Over the past ten years, a number of new contraceptive methods have become available to adolescents. According to NFHS-3 data even though contraceptive awareness is 94% among girls aged 15–19, only 23% of the married and 18% of the sexually active

unmarried girls in this group, used a contraceptive once at least. In the age group of 15–19 years, among those who had sexual intercourse, 10.5% of girls reported having STI or symptoms of STI and 0.07% of girls were found to be HIV positive.[8] The awareness regarding transmission of STIs is low among adolescents. This, in addition to social stigma the diseases were often undisclosed, left untreated leading to complications like infertility, pelvic inflammatory disease and cancer.

Adolescents constitute perhaps the healthiest group in the population, having the lowest mortality and morbidity compared with other population age groups. However, the period of adolescence, beginning with the onset of puberty, is a crucial transition into adulthood. Most adolescents go through adolescence with little or no knowledge of the body's impending physical and physiological changes. In a country like India, where discussion about sexuality with young children is almost absent, adolescents are not prepared mentally or psychologically to cope with these changes.

India is home to 243 million adolescents; young people in the age group of 10-19 years who comprise 21% of the country's population (Census, 2011).[10] Within this paradigm of population and development related issues, the role of adolescents cannot be overlooked. Thus the health of adolescents becomes important by the virtue of their large number. Realizing the importance, WHO has chosen the theme of World Health Day in 1985 "Healthy youth – Our Best Resources" for development of adolescents. The Federation of Obstetrics and Gynaecology Society of India (FOGSI) dedicated the year 1999 to adolescent girl to highlight various problems faced by her.

Adolescent health in India is still in an infant stage, and at risk of infanticide. Currently, India's education system stresses acquisition of information, knowledge and technical skills rather than psychosocial competence or realization of one's potentials. It is achievement oriented rather than child oriented. Even though,

fortunately many school administrators have opened up their eyes towards the importance of life skills education, still many children are deprived of this opportunity.[11] Sixty one percent boys and 53% girls in the age group of 15-19 (National Sample Survey, 66th Round, 2013) are enrolled in schools and these numbers are likely to increase making schools important spaces for reaching out to adolescents. But a major chunk of adolescents are out of school and therefore do not receive services from school based health programmes.

Adolescents have always remained in a dilemma, as they are neither considered children nor adults. A similar fate seems to follow the development of a comprehensive policy on Adolescent Reproductive and Sexual Health in India mainly due to lack of inter-ministerial collaboration, socio-cultural and politico-religious factors. Indian adolescent health programmes are fragmentary at present and there is no comprehensive programme addressing all the needs of adolescents. Access and availability of health care services are severely limited. Lack of accurate information, absence of proper guidance, parent's ignorance, lack of skills and insufficient services from health care delivery system are the major barriers.

Among adolescents, girls constitute a more vulnerable group, particularly in developing countries, where they are traditionally married at an early age and exposed to greater risk of reproductive morbidity and mortality. Data on knowledge and practices regarding reproductive health of this young population are scarce, without which, meaningful programmes cannot be implemented. Majority studies on adolescents are school based and few studies have been done at community level.

Thus this study was planned with the objective of assessing the knowledge, belief and practice regarding reproductive health among late adolescent girls.

OBJECTIVE OF THE STUDY

- To assess the knowledge, belief and practice regarding reproductive health among late adolescent girls.

REVIEW OF LITERATURE

Accelerated growth, maturation of sexual characteristics and the attainment of adult height and body proportions are the physical hallmarks of adolescence. Underlying these changes, are the complicated activation and interplay of several hormonal axes that have been previously quiescent. The teenage years also involve significant developmental changes in the psychosocial area.[3] Though adolescence is a continuous process it is been categorized into early, mid and late adolescence for better understanding of the changes occurring during this period. The three main stages of adolescence:

1. Early adolescence (10-13 years) – characterized by growth spurt and the development of secondary sexual characteristics.
2. Mid adolescence (14-15 years) – this stage is distinguished by the development of a separate identity from parents, of new relationships with peer groups and the opposite sex, and of experimentation.
3. Late adolescence (16-19 years) – At this stage, adolescents have fully developed physical characteristics (similar to adults), and have formed a distinct identity and have well-formed opinions and ideas.[12]

Historical background of adolescent health:

Prior to 1960's, the teenage years were regarded primarily as healthy period of life. The health of adolescents attracted global attention in the past two decades. Twentieth century has fortunately, brought many issues of the adolescents and their medical problems to the forefront. Nevertheless, many adolescents do die prematurely due to accidents, suicide, violence, pregnancy related complications and other

illnesses that are either preventable or treatable. Many more suffer chronic ill-health and disability. In addition, many serious diseases in adulthood have their roots in adolescence such as, tobacco use, STIs including HIV, poor eating and exercise and other habits that lead to illness or premature death later in life.[13]

Hall G. S. in his study, Adolescence its psychology and its relations to physiology, anthropology, sociology, sex, crime, religion, and education in New York quoted that "The curve of despondency starts at eleven, rises steadily and rapidly till fifteen, and then falls steadily till twenty three". Moreover, the causes of depressed mood stated by Hall are similar to the causes identified today: "Suspicion of being disliked by friends, of having faults of person or character that cannot be overcome, the fancy of hopeless love". He emphasized that the need for novel and intense sensation is especially high during adolescence: "At no time of life is the love of excitement so strong as during the season of the accelerated development of adolescence, which craves strong feelings and new sensations, when monotony, routine, and detail are intolerable". He also identified the link between sensation-seeking and risk behaviour in adolescence. Most surprising similarity between Hall and today's psychologists with respect to adolescent biological development pertains to knowledge of brain development. Despite having no Magnetic Resonance Imaging (MRI) or even Electroencephalogram (EEG), Hall and his contemporaries knew that nearly all brain cells have already appeared at birth, that the brain reaches its full weight by age 12–14 years, that what really matters for intelligence is not the number of brain cells but the "fibres" (dendrites) connecting brain cells, and that these fibres show accelerated growth at puberty.[14]

The adolescent poses a distinct array of reproductive and sexual health challenges. These challenges include the consequences of early marriage, unsafe abortions, high-risk behaviour, lack of awareness about contraception and reproductive health issues, RTIs and STIs including HIV and non-consensual sex. This creates an "unmet need" for reproductive and sexual healthcare. This unmet need varies among married and unmarried adolescents. The health seeking behaviour also depends upon the marital status of the adolescent.[15]

A community based cross sectional study conducted among adolescent girls (10-19 years) regarding Reproductive Health in an urban population of Meerut, Uttar Pradesh found the mean age of menarche to be 13.16 years. Out of 402 girls interviewed, 72.1% of the girls had attained menarche by the time of the survey and among them 66.9% of them reported to have regular periods and 40.3% of the girls complained of pain and cramps during periods. While 29.6% of the girls had knowledge about contraception, 60% of the girls had heard about HIV/Acquired Immunodeficiency Syndrome (AIDS) and 31.8% of the girls knew about RTIs. Out of the total girls studied, only 16.4% girls reported symptoms of RTI, of whom maximum girls had vaginal discharge (80.3%) followed by low backache (13.6%). Prevalence rate of RTIs was maximum (90.9%) with poor personal hygiene and lowest with good personal hygiene (10.6%), the difference found to be statistically significant ($P<0.001$). Of the 66 girls reported to have symptoms of RTI, only 7 (10.6%) of them sought treatment for their symptoms.[16]

The cross sectional study on knowledge and practices about Reproductive Health undertaken among adolescent girls from 10-19 years of age, in an urban slum area of Mumbai showed 32.8% subjects had unsatisfactory menstrual hygienic

practices, 49% of the participants were aware about menstruation before menarche and the main source of information being mother in 55.1% girls. Adolescents who were aware about availability of antenatal services were 88% and awareness about poor perineal hygiene predisposes to reproductive tract infection was 69.3%. Girls who had correct knowledge of modes of transmission of HIV were 66%, while only 18.7% knew about safe sexual practices. Educational status and early adolescent age group were found to be significantly associated with knowledge regarding menstruation.[17]

A Comparative study undertaken among 200 school girls from rural and urban settings of Jaipur, Rajasthan showed that 40% rural and 60% urban girls considered menstruation as natural phenomena while 39% of urban and 56% of rural girls thought it as disease. Regarding menstruation 32% of urban and 62% of rural girls had no prior information where as 89% urban and 72% of rural respondents knew the duration of menstrual cycle. It was seen that 80% of the urban subjects were using sanitary pads while only 14% of rural girls used them. Majority of the girls had several taboos, regarding reproductive health. It was seen that 52% of urban and 34% rural respondents took medical treatment or advice for various types of RTIs. Only a few urban (20%) and rural girls (15%) believed that both mother and father were responsible for the determination of the gender of the child. Only 23% of urban and 13% of rural girls understood that it is important to have regular health checkups during pregnancy for safe child birth.[18]

Another cross sectional study undertaken among Kurmi (caste) adolescent girls (16-19 years) on awareness regarding Reproductive Health in Raipur city, Chhattisgarh showed that out of 500 girls interviewed, 29.4 % of girls had knowledge

about correct scientific meaning of Reproductive Health. Most of the girl (62.7%) knew the meaning of pregnancy but knowledge regarding fertility period among girls was very low (19.4%). It was also reported that 64.5% of the girls had heard about contraceptives and among them most of the girls (63.3 %) had knowledge of at least two or more methods. Only 17.2% girls were aware of at least two or more symptoms of RTIs. Attitude towards sex education was positive i.e. majority of the girls (86.4%) thought that the sex education is necessary and pre marital sexual relation were disagreed by majority of the girls.[19]

A college based study on awareness regarding Reproductive Health conducted among 500 students of Visakhapatnam city, Andhra Pradesh revealed that one third i.e. 34% of the girls knew about urine pregnancy test for diagnosis of pregnancy and 36% knew about iron supplementation during pregnancy. Regarding contraception, two thirds (62%) of the study population were aware of condoms as a mode of contraception and nearly equal number were aware of female sterilization (54%). Copper T, a very effective method of interval contraception was known to less than one fifth (18%) of study population. Knowledge regarding injectables (0.3%) and emergency contraception (0.8%) was poor. Most of the girls knew about HIV infection (84%), candidiasis was known to 16%, 12% had knowledge about syphilis and only 2% knew of gonorrhoea and 0.4% trichomoniasis. Their knowledge of symptoms and prevention of STIs and cancer screening was limited. Most of them felt the need for sex education. Although two thirds of the study group were aware of socioeconomic factors; haemorrhage and difficult delivery causing maternal mortality, none had knowledge about sepsis and hypertension causing maternal deaths.[20]

The study conducted among rural adolescent girls (15- 19 years) of Varanasi revealed that 37% girls knew about menarche and 43.8 % adolescent girls thought that period disturb their life or pollute environment. Very few girls (5.6%) had problems of discharge from vagina and 3.7% of them had problem of foul smell from discharge. Majority (83.3%) of the girls knew about HIV/AIDS, 63.3 % adolescent girls had knowledge about the place where test and treatment of HIV/ AIDS is available and 11.1% girls had knowledge about safe sex. Only 10.2 % of adolescent girls said that it is not important to talk about sexual issues whereas, 40.7 % adolescent girls said that it is important to talk about sexual issues.[21]

A study done on awareness and practices of Menstruation and Pubertal changes amongst unmarried female adolescents in a rural area of East Delhi, found that the mean age at menarche was 13.6 years, among them nearly half (45.7%) of the girls who had attained menarche and 29% of pre-pubertal girls said they had prior knowledge about menstruation. Mothers (41%) were the most common source of information about menstruation, followed by elder sisters (22.4%), friends (21%), relatives (6.7%), television (4.4%), books (3.3%), and doctors (1.1%). Majority, 92% of the girls were restricted from worshipping, 70% were restricted from participating in household activities and 56% girls did not eat oily, cold, or spicy foods such as pickles during menstruation. Only 1.6% avoided bathing during menstruation. Majority (74.8%) of the girls used homemade sanitary pad, nearly 24% used ready-made sanitary pads, while 1.5% used cotton wool. During menstruation, complaints like irritability, headache, malaise, and tenderness of the breasts affected 62.9%, 49.6%, 24%, and 9.4% of girls respectively. Dysmenorrhoea was prevalent among 63.75% of the adolescent girls.[22]

The community based cross sectional study was undertaken on Reproductive Health Morbidities among unmarried adolescent girls in Nagpur, found that out of total 224 girls, 146 (65.18%) were having one or more reproductive morbidity. A high prevalence of dysmenorrhoea (53.6%) was found among adolescent girls. Backache was found to be a second common morbidity among 93 (41.52%) girls. Other common morbidities were menorrhagia (16.07%) and irregular cycles (11.16%).Very few girls (5.35%) reported of having excessive white discharge. A highly significant statistical association was found between education of girl and reproductive morbidity i.e. with good education there is decrease in reproductive morbidity compared to less education. Out of 146 girls with reproductive morbidities, only 55(33.67%) girls sought heath care and 91(62.33%) girls remained silent without seeking health care. Out of 91 girls who did not seek health care 88 (96.70%) girls felt 'no need of treatment' as a reason for not seeking health care. A high prevalence of reproductive morbidities was found among adolescent girls but heath care seeking behaviour was found to be very poor. [23]

The results of a pre-test interventional study conducted in Dharwad, Karnataka among adolescent girls studying in 8th, 9th and 10th standard showed that the more number of respondents knew about pubertal changes particularly primary sex characteristics (56.73%) and less number of respondents knew about secondary sex characteristics such as height and weight, pubic hair growth, increase in breast size and hips enlargement (75.0%, 19.23%, 14.42%, and 9.61% respectively). Majority of them had knowledge about onset of age at menstruation (89.42%) and more than half of adolescent girls mentioned that it was a biological process (56.73%) while 47.11% of them had knowledge about duration of menstrual cycle. Majority of them had proper knowledge about age at marriage (53.85%), while less number of adolescents

knew about different parts of reproductive system. Only a few adolescent girls knew the abbreviation of AIDS (33.65%) and HIV (24.04%). Nearly 60% of adolescent girls mentioned that HIV/AIDS spreads through unprotected sex, 50.9% mentioned donation of blood by infected person, infected pregnant mother to her baby(50%) and 25% mentioned by using syringe of infected person.[24]

A study conducted among rural high school girls of Karapa mandal, East Godavari district showed that the mean age of adolescent girls was 13.6±0.85 years and their mean age at menarche was 11.5±3.7 years. More than half of girls had knowledge about pubertal changes but only 14.2% of the girls knew that uterus is the organ responsible for menstruation. Knowledge regarding menstrual hygiene was poor. Majority had idea about legal age for marriage as 18years. More than half of them said that uterus as site of fetal growth. More than 80% had heard about HIV/AIDS but only 30% had knowledge about routes of spread.[25]

The study conducted among 15-19 years age group residing in an urban resettlement colony of Delhi showed that of the total 254 girls enrolled 86% of girls were not psychologically prepared for menstruation. Home-made pads of unwashed clothes were used by 60% and three-fourths of them were unaware of the problems caused by unhygienic practices. For those having menstrual problems 44% reported excessive bleeding and 17% had severe abdominal pain during menses. While 79% of the girls admitted that excessive bleeding and severe abdominal pain were abnormal, 45 percent consulted a doctor, 15% took self-medication and 38% did not seek any remedial measures.[26]

A study on knowledge regarding Reproductive Health among urban adolescent girls of Haryana found that Mothers were the most important source of

knowledge (47.4%) regarding menstruation among the girls followed by friends/peers (23.8%), teachers (4.9%) and mass media (4.8%). Regarding contraception, friends/peers were the most important source of information (23.2%) followed by mass media (20.1%), mothers (14.8%), and teachers (10.4%). In relation to information regarding abortion, friends were the most important source (16.1%) followed by mothers (9.3%), mass media (8.7%), and teachers (5.4%). While for safe sex, friends were the most important source (4.0%) followed by mass media (3.0%), teachers (2.4%) and mothers (1.3%).[27]

A study undertaken in Malaysian young females in relation to Reproductive and premarital sexual practices revealed that the respondents had low scores for knowledge regarding pregnancy, contraceptive use and contraceptive availability. The nine most commonly recognised contraceptive methods in order of most cited were condoms (98.9%), birth control pills (97.8%), withdrawal (81.7%), diaphragm (75.5%), female condom (69.1%), intrauterine device (62.3%), abstinence during fertile times (58.4%), emergency birth control pills (57.7%) and cervical cap (50.8%). Majority of women surveyed did not have liberal values in relation to premarital sexual behaviour. The multivariate analyses showed that ethnic group was the strongest correlate of knowledge and attitude scores, other significant correlates were year of study, maternal occupational groups, level of religious faith, dating status and urban–rural localities. Level of premarital sex permissiveness was inversely correlated with reproduction and pregnancy knowledge score, and contraceptive knowledge score.[28]

A comparative study among school going and dropout adolescent girls of Jammu on awareness of Reproductive Health revealed that majority of both school

going (68.0%) and school dropout girls (74.0%) scored well in the identification of reproductive system. The areas where both school going and school dropout girls scored low were; female reproductive organs, conceivable age and reproductive age of men, unsafe abortion, legal and illegal abortion and its harmful effects, clinical symptoms and biological symptoms of AIDS and the relationship between AIDS/HIV/STIs. Knowledge of teenage pregnancy was lower in school going girls (28%) than dropout girls (80%). The difference in knowledge level of reproductive system, teenage pregnancy and STIs in two groups were insignificant but the knowledge level related to mode of pregnancy and AIDS/HIV in the two settings was significant. The results of the study revealed that the school dropout girls had more scientific information, than the school going girls.[29]

The study conducted among adolescent girls in Rune (Pune), found that 120 (49.4%) belonged to the lower middle social class, 154 (63.4%) belonged to nuclear families, almost equal number of girls were vegetarian and non-vegetarian and they liked fast foods like pizza, potato chips, pavbhaji and chocolates. Many reached puberty between 12 and 16 years of age with a mean age of 14 years, a higher proportion of girls 166(68.3%) experienced premenstrual symptoms. Out of 230 girls, 105 were found anaemic, 197 (86.7%) knew that breast milk is ideal for infants. Knowledge of sex and reproduction was poor among girls and 47 (19.34%) had knowledge about contraception and most of them 208 (85.60%) knew about the modes of transmission of HIV/AIDS.[30]

A study conducted was conducted on a total of 521 adolescent girls aged 10-19 years in Midnapore, West Bengal. Of the total subjects 94.2% of them were in the age of 13-16 years. Nearly, 94% respondents reported their age at menarche and

maximum i.e. 54% respondents experienced it in the age of 11 – 13 years. It was observed that 18%, 60.7% and 21.3% of the respondents had good knowledge, moderate or some knowledge and very poor knowledge of puberty, pubertal problems and their prevention respectively. Thirty three percent said that they had faced one or some other kind of physical problems and out of them 60% indicated that they had visited a doctor for their problems. The suffering from any gynaecological problems was 2.48 and 1.94 times greater among subjects with little or some knowledge and minimum or no knowledge compare to subjects with good knowledge of sex education.[31]

The study on an educational intervention on improving awareness regarding some reproductive health issues among female school going adolescents in Chetla, Kolkata found that mean knowledge score increased from 6.8 ± 2.4 to 11.1± 4.3 post intervention. There was a remarkable increase in knowledge regarding minimum age at marriage, early sign of pregnancy and antenatal care in pregnancy following the intervention. Awareness on availability of legal abortion in unmarried pregnant women increased from 8.3% to 44.6% and adverse effects of teenage pregnancy ranged from 3.3% to 52.9%. A significant increase in knowledge was also observed on different contraceptive measures.[32]

A Study on Knowledge of HIV/AIDS transmission among the adolescent girls in slum areas of Solapur found that of 400 adolescent girls, 102 (25.5%) were in the age group of 13-14 years, 115 (28.75%) and 183 (45.75%) were in the age group 15-16 years and 17 years and above, respectively. The mean age of girls was 15.92 ± 2.33 years. Out of the 400 adolescent girls, 63(15.75%) said that HIV/AIDS transmits through unsafe sex, 94 (23.5%) through contaminated blood transfusion, 19 (4.75%)

through mother to child during pregnancy and child birth, 48 (12%) through breast feeding, 24 (6%) by sharing contaminated needles/syringes, and 217 (54.25%) were not aware exactly how HIV/AIDS transmits from one person to another.[33]

Another cross sectional survey regarding knowledge, perception and attitude of urban adolescent school girls towards STIs/HIV, safer sex and sex education was conducted in South Delhi which showed that more than one third of students did not have understanding about the signs and symptoms of STIs other than HIV/AIDS and 30% of respondents considered HIV/AIDS could be cured. While 41% of the girls were confused whether the contraceptive pill could protect against HIV infection, 32% thought it should only be taken by married women. The main sources of information available to respondents about HIV/AIDS, other STIs and safer sex were friends (76%, n = 191), the media (72%, n = 1680), books/magazines (65%, n = 165) and the internet (52%, n = 132). Half of the adolescent girls (48%), considered that it was not possible to talk with their parents about sex and STIs however 24% (n= 61) had used their mother as a source of information.[34]

The study on Awareness about HIV/AIDS among senior secondary school children of Delhi found that (60%) were females. All the students had heard of HIV/AIDS although 48.2% of the students could name sexual route while 44.4% named sharing of syringes and needles as a mode of transmission.[35]

A study on Menstrual Hygiene among adolescent girls in Singur, West Bengal found that out of 160 girls, 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. 138(86.25%) girls believed it as a physiological process. 78 (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.[36]

The community based study on menstrual hygiene among adolescent girls (Andhra Pradesh) found that 34.63% girls used old cloth for protection during menstruation and 53.7% girls have used sanitary pads during menstruation. Majority of girls (78.99%) were restricted to attend religious occasions during menstruation.[37]

A similar study on menstrual hygiene among adolescent school students in West Bengal found that out of 147 girls, 62(42 %) girls were aware about menstruation prior to attainment of menarche. Hand-washing was regular among 91.8% but 16.3% washed only with water. Similarly washing of private parts were regular among 76.9% but 74.1% used only water and no soap. There is significant relationship between hygienic practices followed and presence of continuous supply of water and presence of exclusive toilet of their family. Except for 2(1.3%) everybody followed some taboo or unnecessary restriction.[38]

Another study undertaken on knowledge and practices regarding menstrual hygiene among rural and urban adolescent girls in Udupi taluk, Manipal found that around 34% girls 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.[39]

Similarly a study was undertaken among school girls in Amritsar city, Punjab. Out of 300 respondents, 61.35% girls were aware about menstruation prior to initiation of menarche and mother was the first informant in 55.3% of respondents. It was seen that 73.7% girls believed menstruation was a normal physiological process and 69% girls knew regarding use of sanitary pads during menstruation. Regarding menstrual hygiene practices, 68.7% girls used sanitary pads, 30% used cloth or rag and 98% girls practiced different types of family restriction during menstruation.[40]

A study done among adolescent tribal girls in rural Gujarat, India on improving quality of life with new menstrual hygiene practices found that 68% of adolescent girls said their first choice was falalin cloth, while 32% said it was sanitary pads. None of them preferred old cloth. The introduction of falalin cloths improved quality of life significantly and to lesser extent also sanitary pads. No significant reduction was observed in self-reported symptoms of RTIs. Falalin cloth were culturally more acceptable as they were readily available, easy to use and cheaper than sanitary pads.[41]

An educational intervention study conducted among pre-university female student of Belgaum regarding menstrual hygiene showed that 52.1% had correct knowledge regarding menstruation (i.e. normal physiological process) before the intervention where as it was increased to 96% after the health education intervention (P-value=<0.001). Regarding the organ of menstrual blood flow, 29.7% had given correct answer (i.e. uterus) at baseline which increased to 90.4% after post test; where as 65.3% didn't know the answer, which was decreased to 9.6% in post test. Concerning the knowledge on duration of normal menstruation, 68.6% had correct knowledge (i.e.5 days) in pre-test which increased to 92.1% in post test (P-

value=<0.024). Majority i.e. 78.5% of the students had correct knowledge on interval between 2 menstrual cycles during pre test which increased to 95.0% in post test. Also 11.6% of the respondents did not know anything about the interval between 2 menstruation cycles which was reduced to 2.3% in post-test. There was no significant difference observed in restriction on household works and religious activities from pre-test to post test (p>0.05). However significant difference was observed in restriction in moving freely and entering kitchen from pre-test to post-test (p<0.001).[42]

A study undertaken on knowledge, attitude and practice of contraception among college students in Sikkim, in India found that 98% (153/156) of the students had knowledge about family planning and 86% (134/156) of them had heard about contraceptives. Many of them knew about condoms (85%) and contraceptive pills (40%), but knowledge about permanent methods and Cu-T was poor (average 12%). Most students felt contraceptives were to be used to prevent unwanted pregnancy (35%) and for birth spacing (30%). 11% of students had used some form of contraceptive in the past and 7% were using currently. The most commonly used contraceptives were condoms, followed by combined use of OCP and condom.[43]

Reproductive health problems include too-early pregnancy, childbearing infertility, genital mutilation, unsafe abortion, STIs, including HIV, and gender-based violence, including sexual assault and rape. These problems are preventable and education is a key component of prevention. For example, the few countries that have successfully decreased national HIV prevalence have achieved those gains mostly by encouraging safer sexual behaviours in adolescents. Adolescent girls are less likely than older women to access sexual and reproductive health care, including modern

contraception and skilled assistance during pregnancy and childbirth. Many are poor,have little control over household income, have limited knowledge about it and lack the ability to make independent decisions about their health. Moreover, they often do not have access to health care that meets their specific needs.[44]

Menstrual hygiene and management will directly contribute to Millennium Development Goal-2 (MDG) on universal education, MDG-3 on gender equality and women empowerment. However, the attention on this issue is far from sufficient and even the literature on gender mainstreaming in the sanitary section is silent on the issue of menstrual management. A key priority for women and girls is to have the necessary knowledge, facilities and the cultural environment to manage menstruation hygienically and with dignity.[45] There is considerable consensus that well-functioning health systems are needed to achieve MDG-5 (universal access to reproductive health). Within this, the quality of the services provided to adolescents need to be improved and adolescents use of the services available is to be increased. This requires:

- Collecting and analyzing national statistics in ways that make it easier to understand the needs of pregnant adolescents, their numbers and their use of services.

- Developing health worker competencies to deal with the special information, clinical and psychosocial needs of adolescent mothers and

- Ensuring that the legal and policy environment enhances access to the care that adolescent need.[44]

SCHEMES AND PROGRAMME FOR ADOLESCENT:

- Integrated Child Development Service (ICDS) scheme:

Nutrition program for adolescent girls was proposed by 10th Five Year Plan and Nutritional Policy in which girls who weigh less than 35kg and pregnant women who weigh less than 45kg and below poverty line are entitled to get ration 6kg/month free of cost in the form of wheat or rice.[46]

- Kishori Shakti Yojana:

All adolescent girls (11-18years) receive following services:

- ✓ Watch over menarche
- ✓ Immunization
- ✓ General health check-up once in every 6 months.
- ✓ Treatment for minor ailments
- ✓ De-worming
- ✓ Prophylactic measures against anaemia, goiter, vitamin deficiency etc
- ✓ Referral services[46]

- Rajiv Gandhi Scheme for Empowerment of Adolescent Girls-SABLA**:** Services under the Scheme: There are two major components under the Scheme - Nutrition Component and Non Nutrition Component.

i) Nutrition Component: 11-14 years : Out of school girls 14 -18 years : All girls

ii) Non Nutrition Component:

a) For 11-18 years - Nutrition provision, Iron and folic acid supplementation, Health check-up and Referral services, Nutrition and Health Education, Counselling/ Guidance on family welfare, Adolescent Sexual and Reproductive Health, Child care practices, Life Skill Education and accessing public services

b) For 16-18 years - Vocational training under National Skill Development Programme.[47]

- Under Reproductive and Child Health (RCH) II**:**

Adolescent Health Initiative (AHI) consists of two components:

i) Adolescent Friendly Health Services (AFHS)

ii) Adolescent Health Counselling Services

Adolescent Health Clinic provides following services:

- General examination
- Nutrition advice
- Detection and treatment of anaemia
- Easy and confidential access to medical termination of pregnancy
- Antenatal care and advice regarding child birth
- RTIs/STIs detection and treatment
- HIV detection and counselling

- Treatment of psychosomatic problems
- De-addiction
- Other health concerns[47]
- Sanitary napkin program:

In this promotion of sanitary napkins is done so as to maintain menstrual hygiene and prevention of RTIs/STIs.

- Adolescent Reproductive and Sexual Health:

Promotive Service:

- ✓ Condom promotion
- ✓ Focus care during antenatal period
- ✓ Counselling and provision for emergency contraceptive pills.
- ✓ Counselling and provision for reversible contraceptive pills.
- ✓ Information and advice on Sexual and Reproductive Health (SRH) issues.
- ✓ Sex ratio, Pre-Conception and Pre-Natal Diagnostic Techniques Act.

Preventive Service:

- ✓ Services for Tetanus Toxoid immunization
- ✓ Services for prophylaxis against nutritional anaemia.
- ✓ Nutrition counselling

- ✓ Safe Abortion
- ✓ Management of post abortion complication
- ✓ Curative
- ✓ Treatment of RTI/STI
- ✓ Treatment and counselling for Menstrual disorder
- ✓ Management of Sexual abuse among girls
- ✓ Referral Services
- ✓ Voluntary counselling and testing centre
- ✓ Prevention of parent to child transmission
- ✓ Antiretroviral therapy
- ✓ Outreach Services
- ✓ Periodic health check-up and community camp
- ✓ Periodic health education (Sneha clinic)[48]

- Rashtriya Kishor Swasthya Karyakram (RKSK) :

Government of India launched RKSK during January 2014 with following objectives:

- ✓ Improve nutrition
- ✓ Improve Sexual and Reproductive Health

- ✓ Enhance Mental Health
- ✓ Prevent injuries and violence
- ✓ Prevent substance misuse[49]

LEGISLATIONS FOR ADOLESCENT:

- ✓ The Juvenile Justice Act 2000
- ✓ The Child Labour Act 1986
- ✓ The Child Marriage Restraint Act 1929
- ✓ The Right to Education Act 2008
- ✓ The Narcotic Drugs and Psychotropic Substances Act 1985
- ✓ The Immoral Traffic (prevention) Act 1956[46]

METHODOLOGY

The present study was conducted in Ashoknagar field practice area of Department of Community Medicine, Jawaharlal Nehru Medical College, Belagavi. It caters to a population of 31,733. Ashoknagar Urban Health Centre (UHC) covers six areas namely Shivabasavnagar, Nehrunagar, Ashoknagar, KSRPC, Markandeyanagar and Azamnagar and one notified slum, Medar colony.

STUDY POPULATION

Late adolescent girls between the age group of 16-19 years residing in Ashoknagar field practice area, Belagavi.

STUDY DESIGN

A community based cross-sectional study

STUDY PERIOD

The study was conducted over a period of one year from 1st January to 31st December 2014.

SAMPLE SIZE

Calculated using the formula:

$n = 4 p q / d^2$

n = sample size

p = 39% (prevalence of knowledge about menstruation[18])

q = 61% (100-p)

d = relative error 10% of p i.e 10% of 39

$$\therefore n = \frac{4 \times 39 \times 61}{3.9 \times 3.9}$$

$n = 625.64$

$n \approx 625$

SAMPLING PROCEDURE

The population of Ashoknagar field practice area is 31,733

6% is the population of girls aged 16-19years

Therefore population of girls in the age group of 16-19years was $\frac{6 \times 31733}{100} = 1903$

$\therefore$ 1903/625 = 3.04

Hence house to house visit was made and every 3rd girl was enrolled in the study.

INCLUSION CRITERIA

Late adolescent girls between the age group of 16-19 years, residing in Ashoknagar at least for the period of one year.

EXCLUSION CRITERIA

Girls who had not attained menarche

ETHICAL CLEARANCE

The study was approved from Institutional Ethics Committee for Human Subject's Research, Jawaharlal Nehru Medical College, Belagavi (Annexure I), Letter No. MDC/DOME/92

DATA COLLECTION PROCEDURE

The subjects were interviewed by using predesigned and pretested questionnaire (Annexure III). A detailed questionnaire was prepared and was pretested and validated during the pilot study. It included information on socio-demographic variables, knowledge, beliefs and practices regarding menstruation, contraception, pregnancy, abortion, STIs and HIV/AIDS.

Subjects were interviewed by the candidate in-person. Interview was carried out with adequate privacy in a quite comfortable room at their household. All the subjects were informed about the purpose of the study and after obtaining informed consent from the study subjects between the age group of 18–19 years and assent from 16-17 years old subjects (Annexure II), they were interviewed. It took about 20-30 minutes for interviewing a study subject.

DATA ANALYSIS

Data was entered in Excel sheet after coding. SPSS (Trial version) 21.0 software was used for analysis of the data. Numerical variables were analysed as means and standard deviations. Categorical data were summarized using percentages. Chi-square test was used to test the association between various study variables.

DEFINITION OF STUDY VARIABLES

1. **Late adolescent girls** – 16-19 years aged girls were considered as late adolescent girls.[12]
2. **Age:** Calendar age in years was considered for the study (nearest completed year)

3. **Studying -** Adolescent girls attending school or college.
4. **Illiterate:** A person who cannot read and write with understanding in any language.
5. **Primary school:** A person who has studied from first to seventh standard.
6. **Secondary school:** A person having studied at least until 8^{th} standard but not beyond 10^{th} standard.
7. **Post SSLC:** A person having studied at least until 10^{th} standard but not beyond 12^{th} standard.
8. **Graduate**: A person who had a bachelor's degree in any field.
9. **Post graduate**: A person who has a Master degree in any field.
10. **Nuclear family:** Married couple along with their dependent children who live in the same house.
11. **Joint family:** More than one married couple along with their dependent children who live in the same household. Male members are blood relatives and female members of the family are related by either marriage or blood.
12. **Broken family:** A family consists of widow/ widower/ divorcee living with or without their dependent children.
13. **Socio-Economic status (SES):**

Information regarding per capita income (in Rupees / month) was collected and socio-economic status was classified using Modified B G Prasad's classification for the study period (2014). This was obtained by multiplying per capita monthly income of 1961, (as suggested by BG Prasad) with the Multiplication factor.

$$\text{Multiplication factor} = \frac{\text{Current Consumer Price Index (CPI) X 4.93}}{100}$$

As our study period was from 1st January to 31st December 2014, the mean consumer price index for the period was considered.

Mean Consumer Price Index of Year 2014 was Rs. 1130.

Substituting in the formula,

Multiplication factor = 11307 X 4.93/ 100 = 55.71

Socio-economic Status	BG Prasad's Classification of 1961	Modified BG Prasad's Classification for Year 2014
I	Rs 100 and above	Rs 5571and above
II	Rs 50-99	Rs 2786 - 5570
III	Rs 30-49	Rs 1671- 2785
IV	Rs 15-29	Rs 836 -1670
V	Below Rs 15	Below Rs 836

14. **Menarche:** It is defined as beginning of cycle of menstruation.
15. **Gravidity:** Denotes pregnant state both present or past, irrespective of the period of gestation.
16. **Parity:** Denotes state of previous pregnancy beyond the period of viability.
17. **Menstruation:** It is a hormonal mediated physiological process wherein there is periodic discharge of blood and mucosal tissue from the uterus, occurring approximately monthly from the onset of menarche to menopause in non-pregnant girls/women.
18. **Interval between menstrual cycle:** The normal interval between menstrual cycle ranges from 21 - 35days.

19. **Ovulation*:*** A process whereby a secondary oocyte is released from the ovary following rupture of a mature Graafian follicle and becomes available for conception.
20. **Fertilization:** A process of fusion of the spermatozoon with mature ovum.
21. **Emergency contraception:** A method of contraception used as an emergency procedure before menstruation is missed, to prevent pregnancy following unprotected intercourse or expected failure of contraception.
22. **Colostrum:** It is the milk secreted during the first three days after delivery. It is yellow and thick, contains more antibodies and cells and high amounts of vitamins A, D, E and K.

RESULT

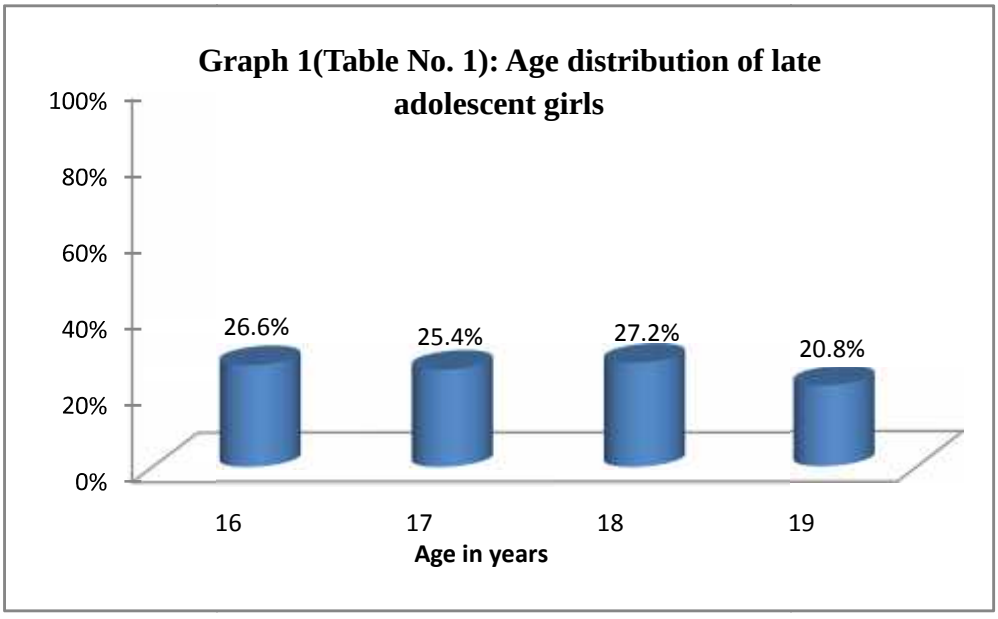
The present study was conducted in the urban field practice area of Department of Community Medicine, Jawaharlal Nehru Medical College, Belagavi on 625 late adolescent girls during the period of January to December 2014. Most of the population can fluently speak and understand Kannada, Hindi and Marathi languages. The data obtained was tabulated and analyzed under following headings:

1. **Socio-demographic profile of adolescent girls**
2. **Assessment of knowledge, belief and practice of adolescent girls regarding reproductive health**
3. **Gap in knowledge, belief and practice of adolescent girls**
4. **Association between socio-demographic factors and practice regarding menstruation among adolescent girls**

I. SOCIO-DEMOGRAPHIC PROFILE OF ADOLESCENT GIRLS

Table No. 1: Age distribution of late adolescent girls

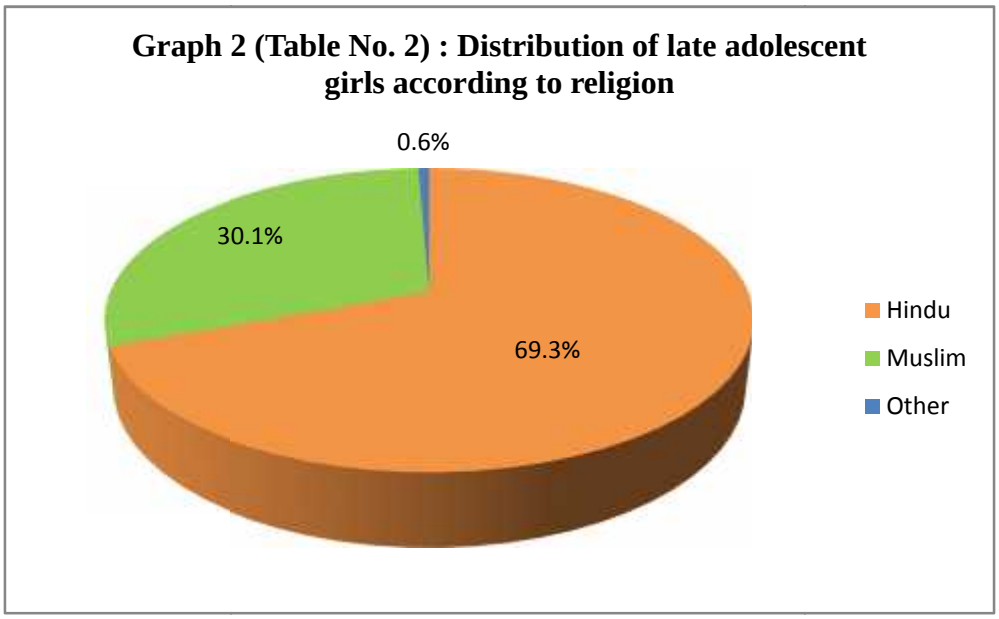
Age (in years)	Number	Percentage
16	166	26.6
17	159	25.4
18	170	27.2
19	130	20.8
Total	**625**	**100**



In the present study, out of 625 respondents 170 (27.2%) girls were aged 18 years followed by 166 (26.6%) aged 16 years, 159 (25.4%) aged 17 years and 130 (20.8%) aged 19 years. The mean age (±SD) of the respondents was 17.4±1.09 years and median was 17.5 years.

Table No. 2: Distribution of late adolescent girls according to religion

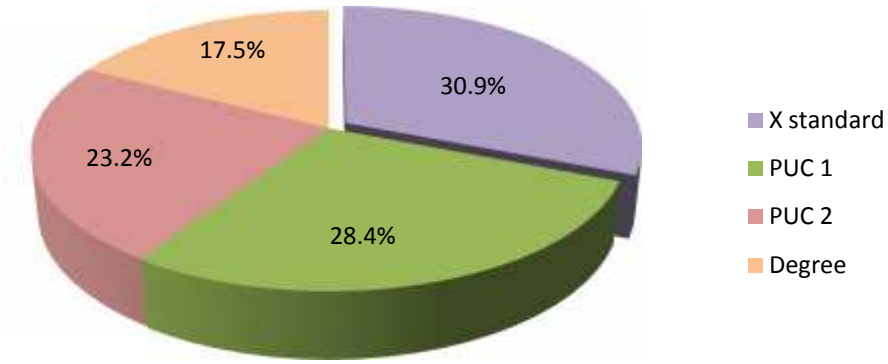
Religion	Number	Percentage
Hindu	433	69.3
Muslim	188	30.1
Other	4	0.6
Total	**625**	**100**



Of the total 625 girls studied, majority 433 (69.3%) adolescent girls were Hindus, followed by Muslims 188 (30.1%) and 4 (0.6%) belonged to Christian and Jain religion.

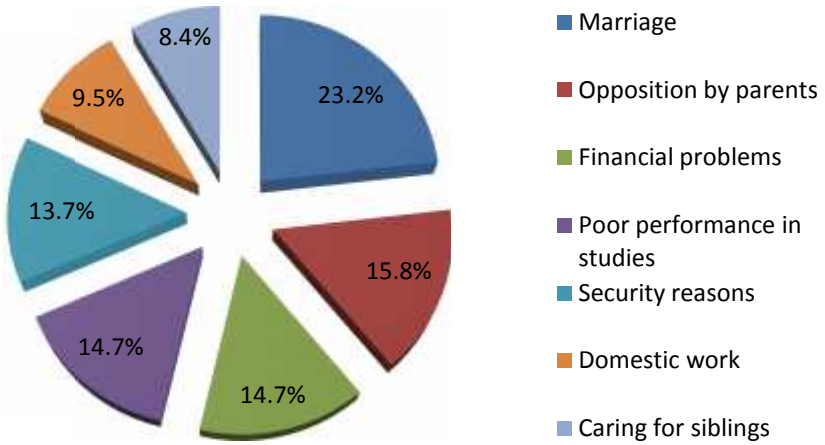
Distribution of late adolescent girls according to studying pattern: In our study, majority 530 (84.8%) of the adolescent girls were studying and 95 (15.2%) of them had stopped studying at the time of our study.

Graph 3: Literacy status of late adolescent girls



Out of 530 adolescent girls who were still studying, 164 (30.9%) of them were studying in 10th standard, 151(28.4%) in Pre-university College (PUC) 1st year, 123 (23.2%) in PUC 2nd year and 92 (17.5%) were perusing one or the other bachelors' degree.

Graph 4: Distribution of late adolescent girls according to reason for discontinuing studies



Among the 95 dropouts, 22 (23.2%) discontinued their education because they got married, 15 (15.8%) due to opposition by parents with the view that further education would lead to excess independence in girls, 14 (14.7%) due to financial problems in the family, another 14 (14.7%) due to their poor scholastic performance (failure to pass exams), 13 (13.7%) for security reasons, 9 (9.5%) because of domestic work and remaining 8 (8.4%) discontinued to look after siblings.

Table No. 3: Literacy status of parents' of late adolescent girls

Literacy status	Father's		Mother's	
	Number	**Percentage**	**Number**	**Percentage**
Illiterate	41	6.6	141	22.6
Primary school	72	11.5	96	15.4
High school	165	26.4	225	36.0
PUC/Diploma	164	26.2	72	11.5
Graduation	163	26.1	78	12.5
Post graduation	20	3.2	13	2.0
Total	**625**	**100**	**625**	**100**

In our study, 41 (6.6%) fathers and 141 (22.6%) mothers of late adolescent girls were illiterates. Of the literate fathers, 72 (11.5%) were educated up to primary school, 165 (26.4%) up to high school, 164 (26.2%) had studied beyond SSLC, 163 (26.1%) were graduates and 20 (3.2%) had perused post graduation. Among the literate mothers, 96 (15.4%) were educated up to primary school, 225 (36.0%) up to high school, 72 (11.5%) had studied beyond SSLC, 78 (12.5%) were graduates and 13 (2.0%) had perused post graduation.

Table No. 4: Distribution of late adolescent girls according to their fathers' occupation

Fathers occupation	Number	Percentage
Private Service	243	38.9
Business	146	23.3
Government Service	106	17.0
Daily wage worker	73	11.6
Factory worker	51	8.2
Expired/Not working	6	1.0
Total	**625**	**100**

In the present study, 243 (38.9%) and 106 (17.0%) fathers' of adolescent girls were in private and government services respectively, 146 (23.3%) were businessmen, 73 (11.6%) were daily wage worker and 51 (8.2%) were factory worker. Among the remaining, 3 (0.5%) had expired and 3 (0.5%) were not employed in any occupation.

Table No. 5: Distribution of the late adolescent girls according to their mothers' occupation

Mothers occupation	Number	Percentage
Housewife	484	77.4
Working	73	11.7
Daily wage worker	68	10.9
Total	**625**	**100**

In our study, 484 (77.4%) of the mothers of late adolescent girls were housewives, 73 (11.7%) were working either in private sector or were in government service and few were self employed. The rest 68 (10.9%) were daily wage worker.

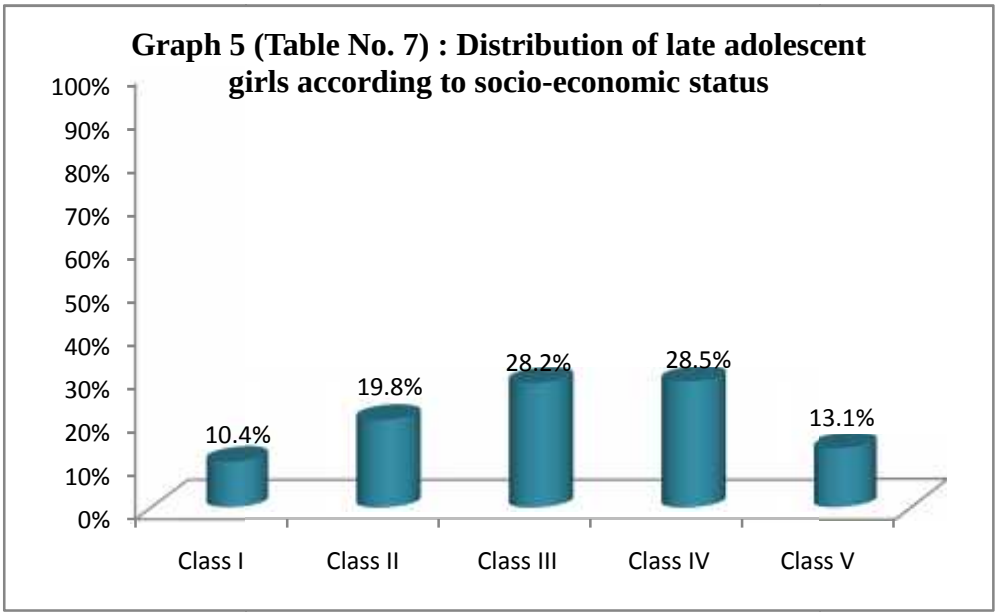
Table No. 6: Distribution of late adolescent girls according to type of family

Type of family	Number	Percentage
Nuclear	389	62.2
Joint	233	37.3
Broken	3	0.5
Total	**625**	**100**

In our study, 389 (62.2%) of the study participants belonged to nuclear family, 233 (37.3%) to joint family and 3 (0.5%) to broken family.

Table No. 7: Distribution of late adolescent girls according to socio economic status

Socio economic status	Number	Percentage
Class I	65	10.4
Class II	124	19.8
Class III	176	28.2
Class IV	178	28.5
Class V	82	13.1
Total	**625**	**100**

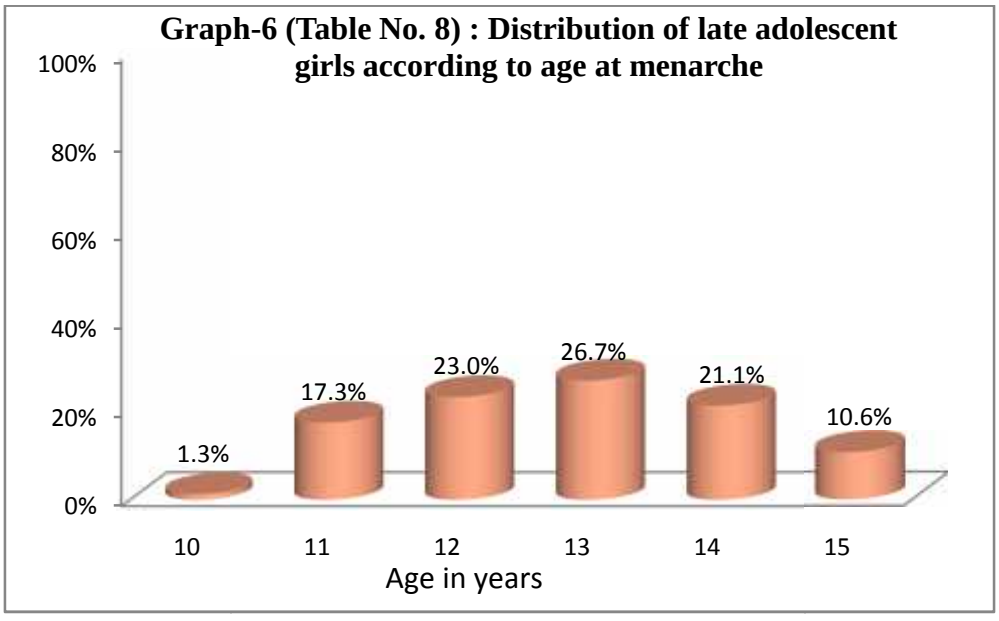


In our study, according to the modified B.G. Prasad classification maximum 178 (28.5%) of study participants were from families of socioeconomic class IV and 176 (28.2%) were from class III, 124 (19.8%) from class II, 82 (13.1%) and 65 (10.4%) from classes V and I respectively.

Distribution of study participants according to marital status and obstetric history: Of the 625 adolescent girls, 49 (7.8%) were married and 576 (92.2%) were unmarried. Among the married girls, 33 (67.3%) got married at the age of 17 years, 9 (18.4%) at 16 years of age and 7 (14.3%) girls at the age of 18 years. Amongst the 49 married adolescents in our study, 28 (57.1%) of them had already started their family. Out of them, 17 (34.7%) were primigravida and 11 (22.4%) were multigravida. Of the 11late adolescent girls who had previous pregnancies, 3 (27.3%) had abortion, 1 (9.1%) had infant death and 7 (63.6%) of the participants children were alive and healthy.

Table No. 8: Distribution of late adolescent girls according to age at menarche

Age at Menarche (in years)	Number	Percentage
10	8	1.3
11	108	17.3
12	144	23.0
13	167	26.7
14	132	21.1
15	66	10.6
Total	**625**	**100**



The mean age (±SD) of menarche was 12.8±1.73 years. Of the total 625 late adolescent girls, 167 (26.7%) were 13 years old when they attained menarche, 144 (23.0%) were 12 years, 132 (21.1%) were 14 years, 108 (17.3%) were 11 years, 132 (10.6%) were 15 years and 8 (1.3%) had attained menarche by 10 years of age.

II. ASSESSMENT OF KNOWLEDGE, BELIEF AND PRACTICE OF ADOLESCENT GIRLS REGARDING REPRODUCTIVE HEALTH

Table No. 9: Distribution of late adolescent girls according to their knowledge regarding menstruation

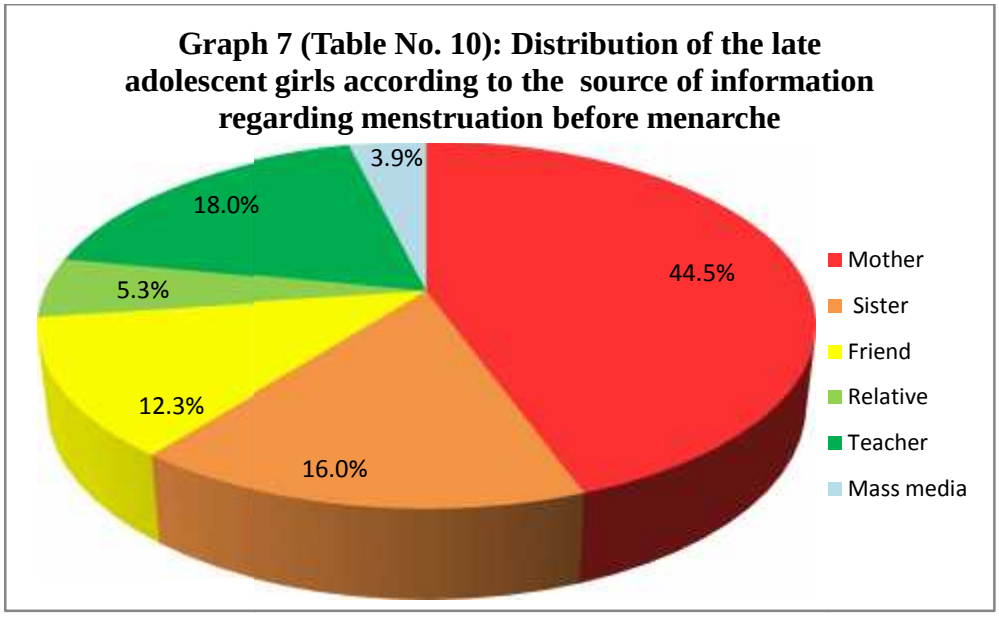
Variables	Number	Percentage
Menstruation is a normal process		
Yes	494	79.0
No	131	21.0
Aware about menstruation before menarche		
Yes	416	66.6
No	209	33.4
Organ responsible for menstruation		
Uterus	355	56.8
Stomach	111	17.8
Kidney	35	5.6
Do not know	124	19.8
Interval between menstrual cycles		
Correct	529	84.6
Incorrect	74	11.9
Do not know	22	3.5
Ideal material used during menstruation		
Sanitary pad	547	87.5
Cloth	34	5.5
Do not know	44	7.0
Total	**625**	**100**

In our study, majority 494 (79.0%) of the adolescents said that menstruation was a natural cyclical process and 416 (66.6%) of girls were aware regarding

menstruation before the onset of menarche. It was also noted in our study that 355 (56.8%) of the adolescent girls knew that uterus was the organ responsible for menstruation whereas, 111 (17.8%) said stomach, 35 (5.6%) said kidney and 124 (19.8%) of them did not know the organ responsible for menstruation. Majority, 529 (84.6%) of the adolescents had correct knowledge regarding the normal interval between menstrual cycles. Knowledge regarding ideal material to be used during menstruation, 547 (87.5%) of adolescent girls said sanitary pads and 34 (5.5%) said cloth.

Table No. 10: Distribution of late adolescent girls according to the source of information regarding menstruation before menarche

Source	Number	Percentage
Mother	185	44.5
Teacher	75	18.0
Sister	67	16.0
Friend	51	12.3
Relative	22	5.3
Mass media	16	3.9
Total	**416**	**100**



Among the 416 adolescent girls who were aware about menstruation before menarche, the sources of information were; 185 (44.5%) from mothers, 75 (18.0%) from teachers, 67 (16.0%) from sister, 51(12.3%) from friend, 22 (5.3%) from relative and 16 (3.9%) of them acquired information through mass media.

Table No. 11: Distribution of late adolescent girls according to knowledge regarding pubertal changes

Variables	Number	Percentage
Increase in Breast size		
Yes	449	71.8
No	176	28.2
Growth of axillary and pubic hair		
Yes	368	58.9
No	257	41.1
Broadening of hips		
Yes	144	23.0
No	481	77.0
Appearance of facial acne		
Yes	339	54.2
No	286	45.8
Facial skin becomes oily		
Yes	428	68.5
No	197	31.5
Increase in height		
Yes	304	48.6
No	321	51.4
Increase in weight		
Yes	133	21.3
No	492	78.7
Total	**625**	**100**

In the present study, 625 (100%) adolescent girls knew that menstruation begins when the pubertal changes are complete. Knowledge regarding pubertal changes among study participants varied between fair to poor. Knowledge regarding

increase in breast size was noted among 449 (71.8 %) girls, 428 (68.5%) knew that facial skin becomes oily, 368 (58.9%) told that there will be axillary and pubic hair growth, 339 (54.2%) knew that acne will appear on the face and knowledge regarding increase in height was seen in 304 (48.6%) girls. Whereas, knowledge regarding broadening of hips 144 (23.0%) and increase in weight 133 (21.3%) among late adolescent girls was poor.

Table No. 12: Distribution of late adolescent girls according to their knowledge regarding Reproductive Health

Variables	Number	Percentage
What is ovulation?		
Know	221	35.4
Do not know	404	64.6
What is fertilization?		
Know	293	46.9
Do not know	332	53.1
Poor perineal hygiene predisposes to RTI		
Yes	464	74.3
No	27	4.3
Do not know	134	21.4
Legal age of marriage for Male		
Correct	345	55.2
Incorrect	280	44.8
Legal age of marriage for Female		
Correct	428	68.5
Incorrect	197	31.5
Total	**625**	**100**

In the present study, 221 (35.4%) adolescent girls knew about ovulation and 293 (46.9%) regarding fertilization. Regarding perineal hygiene, 464 (74.3%) girls knew that poor perineal hygiene predisposes to RTI, whereas 134 (21.4%) did not know about it and 27 (4.3%) of them thought poor perineal hygiene doesn't predispose to RTI. In our study more than half, 345 (55.2%) and 428 (68.5%) adolescent girls correctly knew the legal age of marriage for male and female in India respectively.

Table No. 13: Distribution of late adolescent girls according to their knowledge regarding Antenatal and Postnatal Care

Variables	Number	Percentage
Regular antenatal checkups are essential		
Yes	607	97.1
No	2	0.3
Do not know	16	2.6
If yes, number of checkups (N=607)		
Four	60	9.9
Six	46	7.6
Monthly once (9)	439	72.3
Monthly twice (18)	6	1.0
Do not know	56	9.2
Regular post natal checkups are essential		
Yes	538	86.1
No	83	13.3
Do not know	4	0.6
If yes, number of checkups (N=538)		
One	42	7.8
Two	181	33.7
Three	52	9.6
Four	3	0.6
Do not know	260	48.3
Ideal interval between pregnancies (in years)		
< 3	302	48.3
3	196	31.4
> 3	120	19.2
Do not know	7	1.1
Total	**625**	**100**

In our study, of the 625 participants, 607 (97.1%) knew that regular antenatal checkups were essential during pregnancy whereas, 2 (0.3%) of them thought that it was not essential. Of the 607 girls who had knowledge, 439 (72.3%) of them said monthly check ups were essential during pregnancy, 60 (9.9%) four times, 46 (7.6%) six times and 6 (1.0%) told twice a month. Regarding postnatal checkups, 538 (86.1%) of the participants knew that it was essential whereas, 83 (13.3%) of them thought that it was not essential. Of 538 girls, only 3 (0.6%) of them knew correctly that four postnatal checkups are essential. Among the remaining 42 (7.8%) told one visit, 181(33.7%) two visits and 52 (9.6%) three postnatal visits. Out of 625 respondents, 196 (31.4%) correctly knew the ideal interval between pregnancies, 302 (48.3%) respondents thought that the ideal interval was less 3 years, 120 (19.2%) thought more than 3years and remaining 7 (1.1%) didn’t know about it.

Table No. 14: Distribution of late adolescent girls according to their knowledge regarding abortion

Variables	Number	Percentage
Abortion is legal in India		
Yes	290	46.4
No	212	33.9
Do not know	123	19.7
Duration of pregnancy for legal abortion (in weeks) (N=290)		
Up to 8	21	7.2
Up to 12	89	30.7
Up to 16	12	4.2
Up to 20	21	7.2
Do not know	147	50.7
Place for conducting abortion under MTP Act		
Government Hospital	74	11.8
Private Hospital	60	9.6
Both	205	32.8
Do not know	286	45.8
Total	**625**	**100**

In this study, 290 (46.4%) adolescent girls knew that abortion was legalized in India. Among them, 21 (7.2%) thought that the duration of pregnancy for legal abortion was up to 8 weeks, 89 (30.7%) up to 12 weeks, 12 (4.2%) up to 16 weeks and 21 (7.2%) up to 20 weeks. Further, it was also noted that 212 (33.9%) of adolescent girls thought that abortion was not legalized in India and among those who knew it was legalized, 147 (50.7%) of them didn't have knowledge regarding the duration of pregnancy up to which it could be carried out. Less than half, 286 (45.8%) of the adolescent girls did not know the place where abortion under MTP Act can be conducted, 205 (32.8%) told that it could be conducted in both government and private hospitals.

Table No. 15: Distribution of late adolescent girls according to their knowledge regarding contraception

Variables	Number	Percentage
Contraceptive method		
Condom	131	21.0
Oral pill	111	17.8
Intra uterine device	32	5.1
Injectable	2	0.2
Tubectomy	62	10.0
Vasectomy	2	0.3
More than one method	86	13.8
Do not know	199	31.8
Emergency contraception		
Oral Pill	133	21.3
Intra Uterine Device	4	0.6
Condom	232	37.1
Do not know	256	41.0
Total	**625**	**100**

Of the 625 adolescents, 340 (54.4%) girls knew at least one method of contraception, 86 (13.8%) knew more than one method and 199 (31.8%) of them did not have knowledge about contraception. Condom 131 (21.0%) and oral pills 111 (17.8%) were the most commonly known methods of contraception. About, 369 (59.0%) adolescent girls had heard about emergency contraception but 137 (21.9%) knew the correct methods of emergency contraception.

Table No. 16: Distribution of late adolescent girls according to their knowledge regarding RTI

Variables	Number	Percentage
Symptom of RTI		
White discharge	113	18.1
Lower abdominal pain	69	11.1
Urinary tract infection (UTI)	52	8.3
Menorrhagia	43	6.9
Genital ulcer	32	5.1
Vulval itching	7	1.1
More than one symptom	47	7.5
Do not know	262	41.9
Long term effects of RTI		
Infertility	203	32.5
Persistent abdominal pain	80	12.8
UTI	61	9.8
Chronic backache	15	2.4
Do not know	266	42.5
Total	**625**	**100**

In our study, 316 (50.6%) of the adolescent girls knew at least one symptom of RTI, 47 (7.5%) knew about two or more symptoms of RTI and remaining 262 (41.9%) did not know any of the symptoms of RTI. White discharge per vagina 113 (18.1%), low backache 69 (11.1%), urinary tract infection 52 (8.3%) and 42 (6.9%) menorrhagia were the most commonly known symptoms of RTI. Knowledge regarding long term effects of RTI, 359 (47.5%) girls knew and 266 (42.5%) of them did not know. The long term effects of RTI noted in our study were, 203 (32.5%) infertility, 80 (12.8%) persistent abdominal pain, 61 (9.8%) UTI and 15 (2.4%) said chronic backache.

Table No. 17: Distribution of late adolescent girls according to knowledge regarding HIV

Variables	Number	Percentage
HIV full form		
Correct	317	50.7
Incorrect	231	37.0
Do not know	77	12.3
AIDS full form		
Correct	285	45.6
Incorrect	275	44.0
Do not know	65	10.4
Modes of Transmission		
Correct		
Unsafe blood transfusion	129	20.6
Unprotected sexual intercourse	91	14.6
Parent to child	48	7.7
Sharing /Used needles	44	7.0
More than one mode of transmission	251	40.2
Incorrect		
Mosquito bite	19	3.0
Kissing	12	1.9
Swimming with infected person	1	0.2
Do not know	30	4.8
Total	**625**	**100**

Of the 625 girls, 317 (50.7%) of them correctly knew the full form of HIV and 285 (45.6%) correctly knew the full form of AIDS. Majority 563 (90.1%) of the adolescent girls correctly knew various modes of transmission of HIV. Around half 312 (49.9%) of them knew one mode of HIV transmission and 251 (40.2%) knew more than one modes of disease transmission. Among the various modes of transmission known 129 (20.6%) told use of unsafe blood transfusion, 91 (14.6%) unprotected sexual intercourse, 48 (7.7%) parent to child and 44 (7.0%) told sharing/used needles. About 32 (5.1%) had misconceptions regarding the modes of transmission of HIV and 30 (4.8%) girls did not know any of the modes of disease transmission.

Table No. 18: Distribution of late adolescent girls according to their knowledge regarding HIV

Variables	Number	Percentage
Modes by which HIV doesn't spread		
Sharing meals	123	19.7
Playing together	91	14.6
Shaking hands/touching	73	11.7
Mosquito bite	64	10.2
Speaking to infected person	31	5.0
More than one mode of non transmission	144	23.0
Do not know	99	15.8
Preventive measures		
Safe blood transfusion	132	21.1
Safe sexual practices	78	12.5
Sterile needles	54	8.6
Abstinence	36	5.8
Mother should take ART	31	5.0
More than one preventive measure	254	40.6
Do not know	40	6.4
Total	**625**	**100**

In our study, 526 (84.2%) adolescent girls knew one or the other ways by which HIV infection doesn't spread. Among them, 123(19.7%) participants said that HIV doesn't spread by sharing meals, 91(14.6%) by playing together, 73 (11.7%) said by shaking hands or by touching, 64 (10.2%) by mosquito bite, 31 (5.0%) by speaking with infected person and 144 (23.0%) had knowledge about more than one mode by which HIV doesn't spread. Knowledge regarding preventive measures against HIV was known to 585 (93.6%) of adolescent girls. Among them, 132 (21.1%) girls said safe blood transfusion as a preventive measure against HIV transmission, 78 (12.5%) by practicing safe sex, 54 (8.6%) by using sterile needles, 36 (5.8%) by practicing abstinence and 31 (5.0%) said mothers having HIV should take ART as a preventive measure. The remaining 254 (40.6%) of them knew more than one method of prevention and 40 (6.4%) respondents did not know any of the preventive measures against HIV.

Table No. 19: Distribution of late adolescent girls according to their beliefs regarding Reproductive Health

Variables	Number	Percentage
Sex education should be given in high school		
Yes	452	72.3
No	173	27.7
Who is responsible for sex of the child		
Husband	78	12.5
Wife	202	32.3
Both	321	51.4
Do not know	24	3.8
Long term usage of contraception leads to infertility		
Yes	276	44.2
No	167	26.7
Do not know	182	29.1
Usage of condom provides protection against STD/AIDS		
Yes	398	63.7
No	147	23.5
Do not know	80	12.8
Total	**625**	**100**

In this study, 452 (72.3%) girls believed that the sex education should be provided in high school whereas 173 (27.7%) of them thought it should not be

provided. Of the 173 girls, reasons given for not wanting sex education to be imparted in school were, 100 (57.8%) girls felt it made them uncomfortable and 73 (42.2%) girls didn't find it was necessary to know about it. Out of 625 adolescents, 321 (51.4%) of them believed that both husband and wife were responsible for the sex of the child, 202 (32.3%) girls believed that wife alone was responsible, 78 (12.5%) of them believed husband alone was responsible and 24 (3.8%) of them didn't know who is the person responsible for the sex of the child. Regarding contraception, 276 (44.2%) girls believed that long term usage of contraception will lead to infertility whereas 167 (26.7%) of them rightly believed it would not. Most of them 398 (63.7%) of them believed that condom provides protection against STD/AIDS, 147 (23.5%) of them believed that it would not provide protection and 80 (12.8%) didn't not have any beliefs regarding it.

Table No. 20: Distribution of late adolescent girls according to their beliefs regarding Reproductive Health

Variables	Number	Percentage
Consumption of raw papaya causes abortion		
Yes	267	42.7
No	284	45.5
Do not know	74	11.8
Colostrum should be given to newborn		
Yes	483	77.3
No	84	13.4
Do not know	58	9.3
Water should be restricted during post natal period		
Yes	102	16.3
No	493	78.9
Do not know	30	4.8
Total	**625**	**100**

In our study, 284 (45.5%) adolescent girls believed that consumption of raw papaya would not cause abortion whereas, 267 (42.7%) of them thought it may cause abortion and the remaining 74 (11.8%) did not give any opinion about it. Out of 625 girls, 483 (77.3%) believed that the colostrum should be given to the newborn and 84 (13.4%) thought it should not be given. Reasons given by respondents who thought colostrums should not be given were, it was considered dirty milk 27 (4.3%), thick and difficult to digest 22 (3.5%), causes abdominal discomfort 18 (2.9%) and because

elders' advise 17 (2.7%). Majority 493 (78.9%) of the girls thought water should not be restricted during post natal period but 102 (16.3%) girls believed it should not be given as it may cause abdominal distention in newborn 31 (5.0%), elders advice 24 (3.8%), increased frequency of micturition in mothers 23 (3.7%), it helps in reducing maternal weight 21 (3.4%) and 3 (0.5%) thought that child would catch cold/pneumonia.

Table No. 21: Distribution of late adolescent girls according to their beliefs regarding restrictions practiced during menstruation

Variables	Number	Percentage
Certain food should be avoided		
Yes	272	43.5
No	353	56.5
Bath		
Every day	456	73.0
Alternate day / Third day	101	16.2
Don't take bath	24	3.8
Twice a day	44	7.0
Sleeping area		
Same place	456	73.0
Change place	169	27.0
Help the mother in kitchen		
Yes	417	66.7
No	208	33.3
Go to place of worship		
Yes	37	5.9
No	588	94.1
Total	**625**	**100**

In our study of the 625 girls, 353 (56.5%) believed that there should be no restriction to any kind of food but 272 (43.5%) believed certain foods should be

avoided during menstruation. Of the 272 study participants who believed that certain foods should be restricted during menstruation, 88 (32.4%) believed that hot foods like eggs and meat should be avoided, 74 (27.2%) believed spicy food, 68 (25.0%) sour foods and 42 (15.4%) believed fatty foods should be avoided during menstruation (Graph 8). Regarding taking bath during menstruation, 456 (73.0%) girls believed it should be taken daily, 101 (16.2%) on alternate day/third day, 24 (3.8%) not to take bath at all during the period of menstruation and 44 (7.0%) believed should take bath twice a day. Regarding the sleeping area, 456 (73.0%) girls believed that they should sleep in same usual place during menstruation and 169 (27.0%) believed they should sleep separately. About 417 (66.7%) girls believed that they could help the mother in kitchen and 208 (33.3%) believed that they shouldn't enter the kitchen during menstruation. Majority 588 (94.1%) of the girls believed that they shouldn't go to the place of worship during menstruation.

Graph 8: Distribution of late adolescent girls according to type of food restricted during menstruation (n=272)

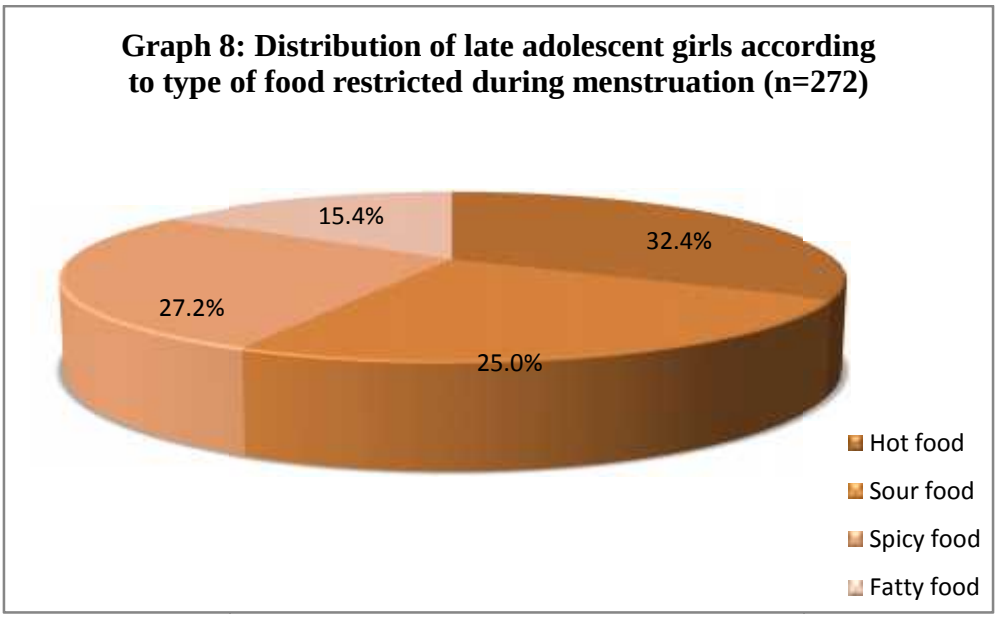


Table No. 22: Distribution of late adolescent girls according to menstrual practices

Variables	Number	Percentage
Material used		
Sanitary pad	271	43.4
Cloth	207	33.1
Both pad and cloth	139	22.2
Tampon	8	1.3
Type of cloth used (n=346)		
Reused cloth	218	63.0
Fresh cloth every cycle	128	37.0
Clean external genitalia		
Yes	330	52.8
No	295	47.2
Total	**625**	**100**

In our study, 271 (43.4%) of the adolescent girls used sanitary pads, 207 (33.1%) used cloth, 139 (22.2%) used both sanitary pads and cloth as per the availability and 8 (1.3%) used tampon. Among the 346 cloth users, 218 (63.0%) were using reused cloth and 128 (37.0%) used fresh cloth every cycle. Among the 218

study participants who used reused cloth, 68 (31.2%) used it for less than 3 cycles, 96 (44.0%) used it for 3 cycles only and 54 (24.8%) used for more than 3 cycles and later diacarded the cloth. Of the 410 sanitary pad users, 284 (69.3%) of them wrapped the pad in paper and disposed it in dustbin, 46 (11.2%) flushed the pad in the toilet, 67 (16.3%) threw it indiscriminately and 13 (3.2%) of the girls burnt the pad (Graph 9). In our study, 330 (52.8%) of the study participants used to clean external genitalia separately while taking bath during menstruation and 295 (47.2%) of them did not.

Graph 9: Distribution of late adolescent girls according to the method of disposal of sanitary pad

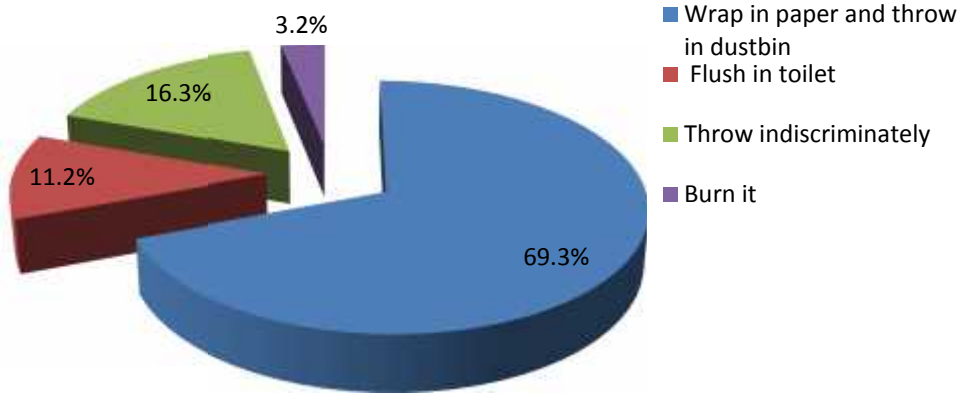


Table No. 23: Distribution of late adolescent girls according to menstrual problem and treatment seeking behaviour

Variables	Number	Percentage
Menstrual Problem		
Yes	228	36.5
No	397	63.5
Menstrual Problem (N=228)		
Dysmenorrhoea	129	20.6
Oligomenorrhoea	64	10.3
Menorrhagia	24	3.8
Polymenorrhagia	9	1.5
Polymenorrhoea	2	0.3
Treatment seeking behavior (N=228)		
Gynaecologist	50	21.9
Self treatment	45	19.8
Doctor other than gynaecologist	29	12.7
Anganwadi worker	2	0.9
No treatment	102	44.7
Total	**625**	**100**

In our study, 228 (36.5%) of adolescent girls had one or the other menstrual problem. Among them 129 (20.6%) of them had dysmenorrhoea, 64 (10.3%) had oligomenorrhoea, 24 (3.8%) had menorrhagia, 9 (1.5%) had polymenorrhagia and 2 (0.3%) had polymenorrhoea. Of the 228 study subjects, 50 (21.9%) girls approached a gynaecologist for treatment, 45 (19.8%) of them took self treatment, 29 (12.7%) approached a qualified doctor other than gynaecologist, 2 (0.9%) sought the help of anganwadi worker and 102 (44.7%) of the girls did not do anything for the menstrual problem.

Table No. 24: Distribution of late adolescent girls according to reproductive tract infection and treatment seeking behaviour

Variables	Number	Percentage
Reproductive tract infection		
Yes	150	24.0
No	475	76.0
Reproductive Tract Infection symptom (N=150)		
Burning micturition	62	9.9
White discharge per vagina	44	7.0
Vulval Itching	36	5.8
Genital ulcer	8	1.3
Treatment seeking behavior (N=150)		
Doctor other than gynaecologist	104	69.3
Anganwadi worker	21	14.0
Gynaecologist	1	0.7
Home remedy	1	0.7
No treatment	23	15.3
Total	**625**	**100**

In our study, 150 (24.0%) of the study participants had infection related to reproductive tract. Among them 44 (7.0%) girls had complaint of white discharge per vagina, 36 (5.8%) vulval itching, 62 (9.9%) burning micturition and 8 (1.3%) girls had genital ulcers. Of the 150 subjects, only 1 (0.7%) girl approached a gynaecologist for treatment, 104 (69.3%) approached a qualified doctor other than a gynaecologist, 21 (14.0%) sought the help of anganwadi worker, 1 (0.7%) took home remedy and 23 (15.3%) girls did not do anything for the reproductive tract infection.

III. GAP IN KNOWLEDGE, BELIEF AND PRACTICE OF ADOLESCENT GIRLS

Table No. 25: Association between knowledge and practice regarding material used during menstruation

Material used during menstruation	Correct practice	Incorrect practice	Total
Correct knowledge	271 (49.5%)	276 (50.5%)	547 (100%)
Incorrect knowledge	0 (0%)	78 (100%)	78 (100%)
Total	**271 (43.4%)**	**354 (56.6%)**	**625 (100%)**
$\chi^2 =$ **68.2**	**df = 1**	**p < 0.001**	

In our study, significant association was found between knowledge and practice of use of sanitary pads during menstruation (p<0.001). It showed that with the increase in knowledge there was increase in the use of sanitary pad. But, among the subjects who had correct knowledge regarding the ideal material to be used during menstrual cycle almost equal number of girls, 271 (49.5%) of them used it and 276 (50.5%) of them did not use it even after knowing it should be used showing a gap in knowledge and practice.

Graph 10 (Table No. 25): Association between knowledge and practice regarding material used during menstruation

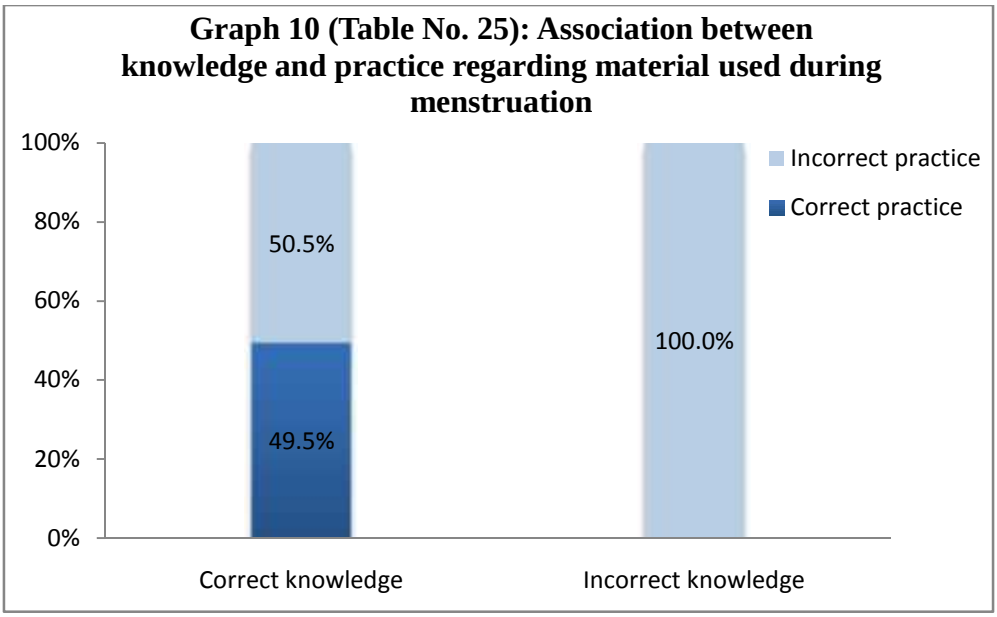


Table No. 26: Association between knowledge and practice regarding perineal hygiene

Perineal hygiene	Correct practice	Incorrect practice	Total
Correct knowledge	289 (62.3%)	175 (37.7%)	464 (100%)
Incorrect knowledge	41 (25.5%)	120 (74.5%)	161(100%)
Total	**330 (52.8%)**	**295 (47.2%)**	**625 (100%)**
χ^2 = 65.0	**df = 1**	**p <0.01**	

In our study, there was an increase in number of girls practicing cleaning of external genitalia who were having correct knowledge regarding perineal hygiene predisposing to RTI as compared to girls who had incorrect knowledge which was statistically significant (p<0.01). However, it was found that 289 (62.3%) of the study participants who had correct knowledge practiced cleaning external genitalia and 175 (37.7%) of them did not practice which shows a gap in knowledge and practice.

Graph 11 (Table No. 26): Association between knowledge and practice regarding perineal hygiene

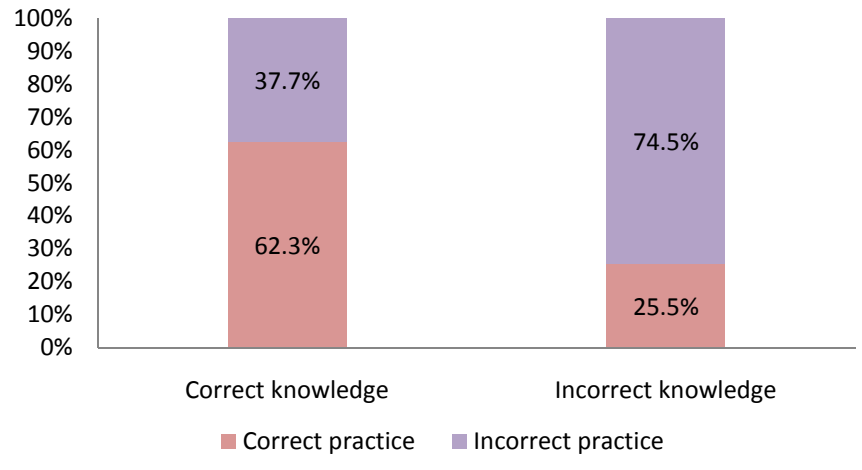


Table No. 27: Association between knowledge and practice regarding legal age of marriage

Legal age of marriage	Correct practice	Incorrect practice	Total
Correct knowledge	398 (93.0%)	30 (7.0%)	428 (100%)
Incorrect knowledge	185 (94.0%)	12 (6.0%)	197 (100%)
Total	**583 (93.3%)**	**42 (6.7%)**	**625 (100%)**
χ^2 = 0.2	**df = 1**	**p = 0.67**	

In our study, no significant association (p=0.67) was found between married and unmarried girls and their knowledge regarding legal age of marriage. Among the married girls, both girls with correct and incorrect knowledge were married before the legal age of marriage, 30 (7.0%) and 12 (6.0%) respectively.

Table No. 28: Association between knowledge and belief regarding sleeping place during menstruation

Sleeping place during menstruation	Right belief	Wrong belief	Total
Correct knowledge	401 (81.2%)	93 (18.8%)	494 (100%)
Incorrect knowledge	55 (42.0%)	76 (58.0%)	131 (100%)
Total	456 (73.0%)	169 (27.0%)	**625 (100%)**
χ^2 = 80.6	**df = 1**	**p <0.001**	

In our study there was significant (p<0.001)increase in right belief regarding sleeping place during menstruation in adolescent girls with correct knowledge as compared to girls with incorrect knowledge regarding the same. However, among the 494 girls who knew that menstruation is a natural process 401 (81.2%) rightly believed that girls should sleep in the same place during menstruation but still 93 (18.8%) girls believed she shouldn't sleep in the same place showing a gap in knowledge and belief.

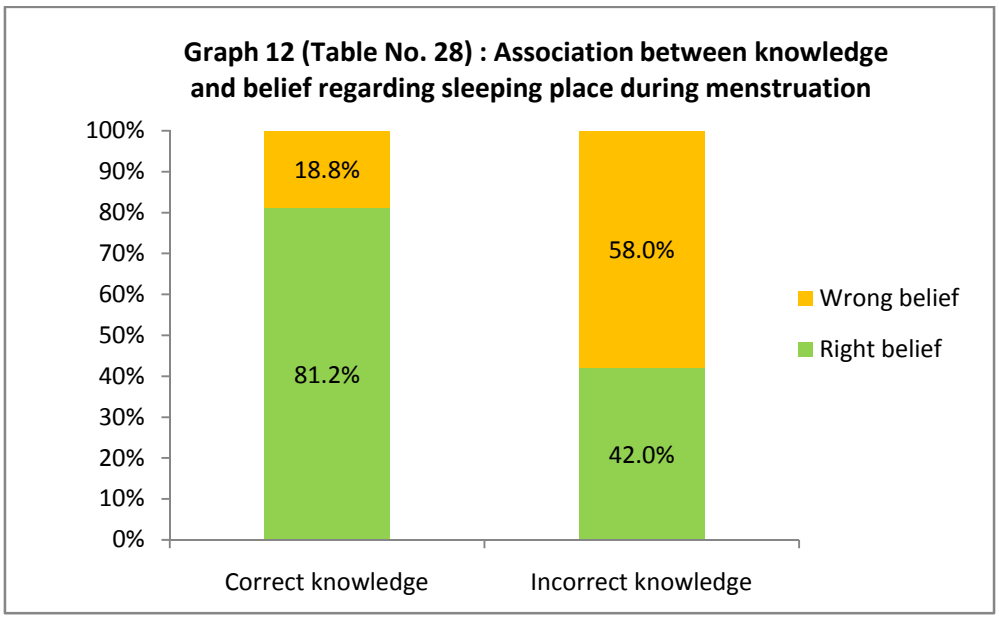


Table No. 29: Association between knowledge and belief regarding helping mother in the kitchen during menstruation

Helping mother in the kitchen during menstruation	Right belief	Wrong belief	Total
Correct knowledge	370 (74.9%)	124 (25.1%)	494 (100%)
Incorrect knowledge	47 (35.9%)	84 (64.1%)	131 (100%)
Total	**417 (66.7%)**	**208 (33.3%)**	**625 (100%)**
χ^2 = 71.0	**df = 1**	**p <0.001**	

In our study significant association (p<0.001) was found between knowledge and belief among adolescent girls on helping mother in the kitchen during menstruation. It showed that among 494 girls who had correct knowledge that menstruation is a natural process, 370 (74.9%) rightly believed that girls could go to kitchen to help their mother's during menstruation and 124 (25.1%) said she shouldn't enter the kitchen.

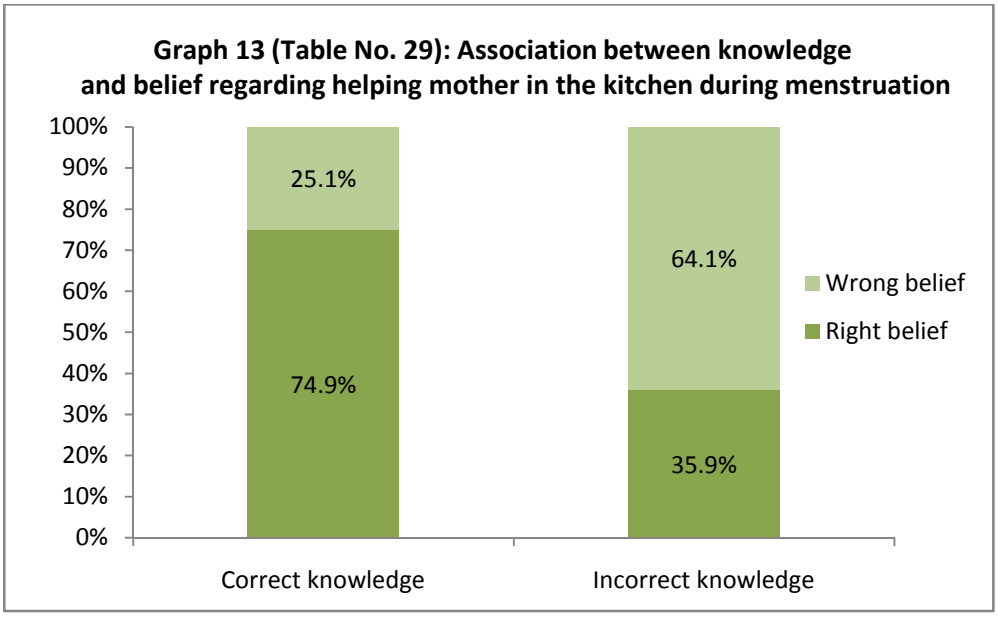


Table No. 30: Association between knowledge and belief regarding going to place of worship during menstruation

Going to place of worship during menstruation	Right belief	Wrong belief	Total
Correct knowledge	37(7.5%)	457 (92.5%)	494 (100%)
Incorrect knowledge	0 (0.0%)	131 (100.0%)	131 (100%)
Total	**37 (5.9%)**	**588 (94.1%)**	**625 (100%)**
χ^2 = 10.4	**df = 1**	**p =0.001**	

In our study significant association (p=0.001) was found between knowledge and belief among adolescent girls regarding going to the place of worship during menstruation. It was found that among 494 girls who knew menstruation is a natural process, 37 (7.5%) believed that girls could go to place of worship during menstruation and 131 (100.0%) girls who said menstruation is not a natural process none of them believed that girls could go to place of worship during menstruation. The above table also shows gap in knowledge and belief among the study participants.

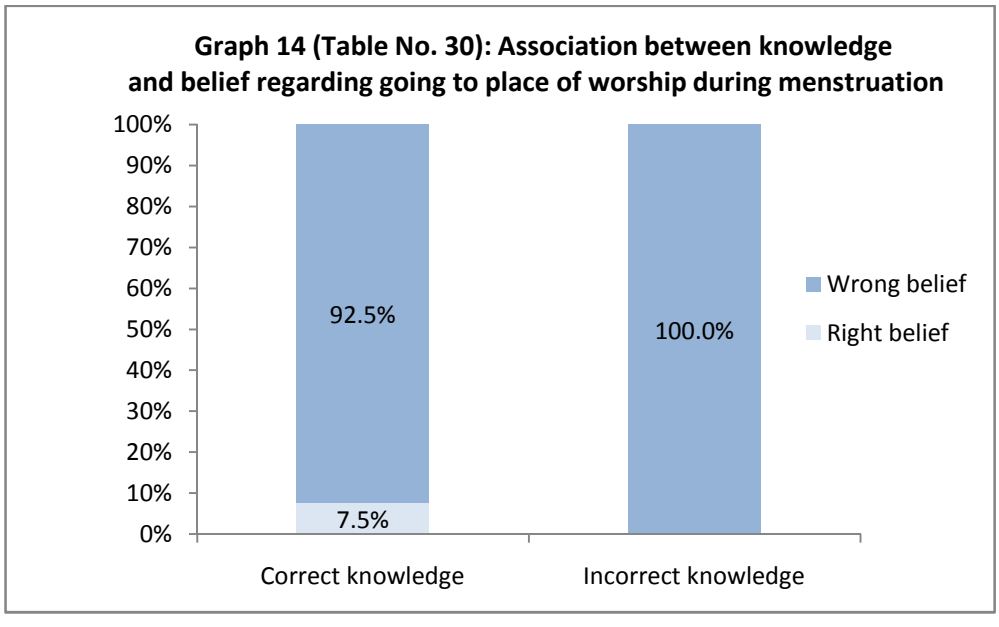
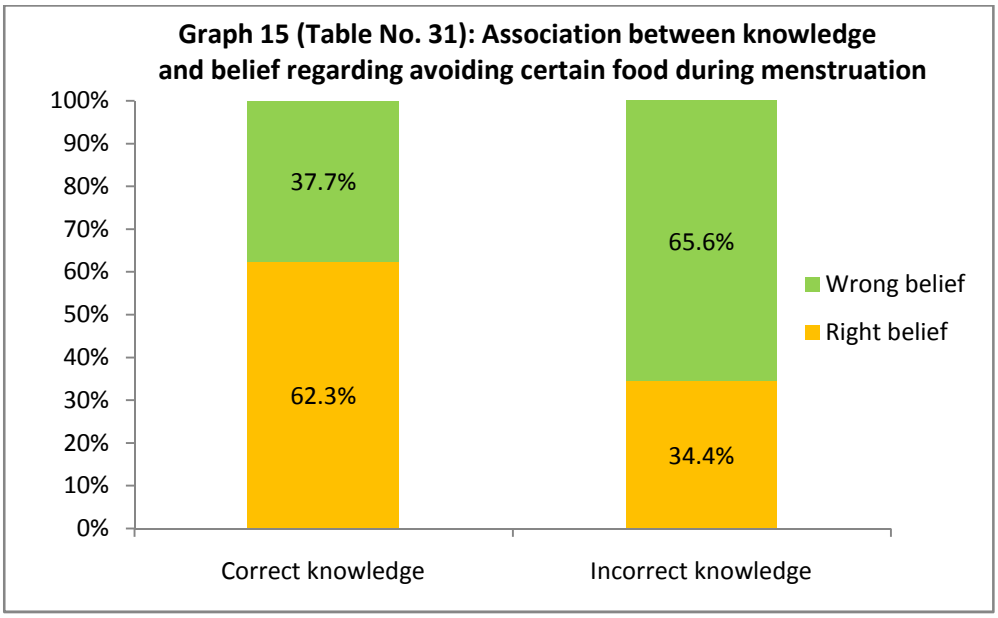


Table No. 31: Association between knowledge and belief regarding avoiding certain food during menstruation

Avoid certain food during menstruation	Right belief	Wrong belief	Total
Correct knowledge	308 (62.3%)	186 (37.7%)	494 (100%)
Incorrect knowledge	45 (34.4%)	86 (65.6%)	131 (100%)
Total	**353 (56.5%)**	**272 (43.5%)**	**625 (100%)**
χ^2 = 33.0 df = 1 p <0.001			

In our study, it was found that among 494 girls who knew menstruation is a natural process, 308 (62.3%) believed that girls shouldn't avoid any variety of food during menstruation as compared to 45 (34.4%) girls among 131 girls who said menstruation is not a natural process believed the same. This difference was statistically significant (p<0.001). However, among 494 adolescent girls who knew menstruation is a natural process, 186 (37.7%) believed that certain foods should be avoided during menstruation showing a gap in knowledge and practice.



IV. ASSOCIATION BETWEEN SOCIO-DEMOGRAFHIC FACTORS AND PRACTICE REGARDING MENSTRUATION AMONG ADOLESCENT GIRLS

Table No. 32: Association between age of late adolescent girls and use of sanitary pads

Age (in years)	Use sanitary pad		Total
	Yes	No	
16	52 (31.3%)	114 (68.7%)	166 (100%)
17	82 (51.6%)	77 (48.4%)	159 (100%)
18	71 (41.8%)	99 (58.2%)	170 (100%)
19	66 (50.8%)	64 (49.2%)	130 (100%)
Total	**271 (43.4%)**	**354 (56.6%)**	**625 (100%)**
χ^2 = 17.2	**df = 3**	**p =0.001**	

In our study, 271 (43.4%) adolescent girls used sanitary pads during menstruation. Among the 271 girls, 82 (51.6%) were 17 years old, 66 (50.8%) were 19 years old, 71 (41.8%) were 18 years old and 52 (31.3%) were 16 years old. With the increase in age, the number of girls using sanitary pads increased and the difference was statistically significant (p=0.001).

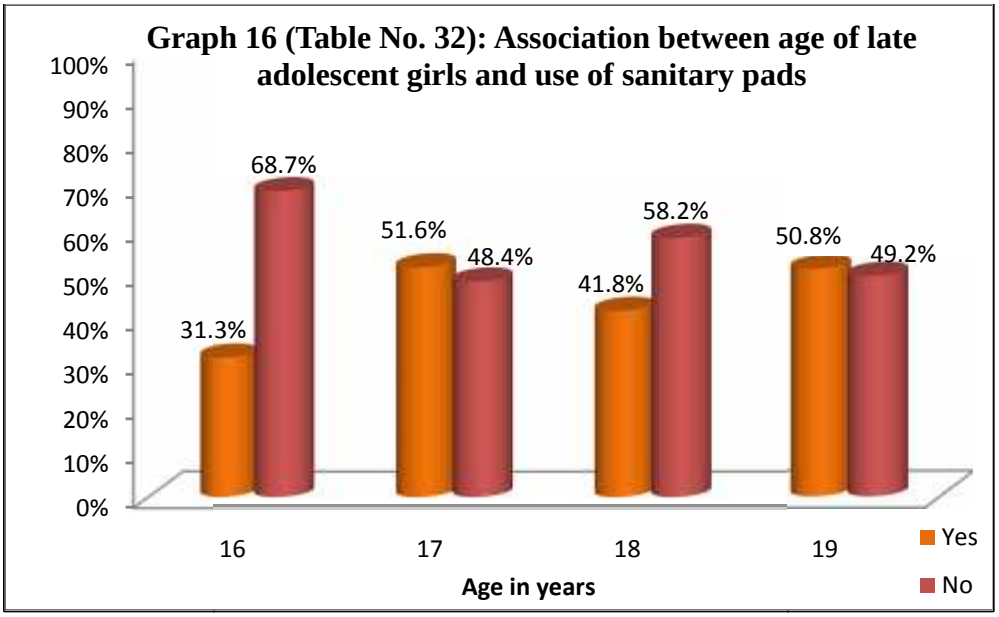


Table No. 33: Association between religion of late adolescent girls and use of sanitary pad

Religion	Use sanitary pad		Total
	Yes	No	
Hindu	216 (51.1%)	207 (48.9%)	423 (100%)
Muslim	21 (12.5%)	147 (87.5%)	168 (100%)
Other	34 (100.0%)	0 (0.0%)	34 (100%)
Total	**271(43.4%)**	**354 (56.6%)**	**625 (100%)**
χ^2 = 1.2 df = 2 p <0.001			

In our study, among the 34 girls belonging to other religion all of them used sanitary pads, of 423 Hindus, 216 (51.1%) used sanitary pads and of the 168 Muslims only 21 (12.5%) of them used pads during menstruation showing significant association (p <0.001) between religion and use of sanitary pads.

Graph 17 (Table No. 33): Association between religion of late adolescent girls and use of sanitary pad

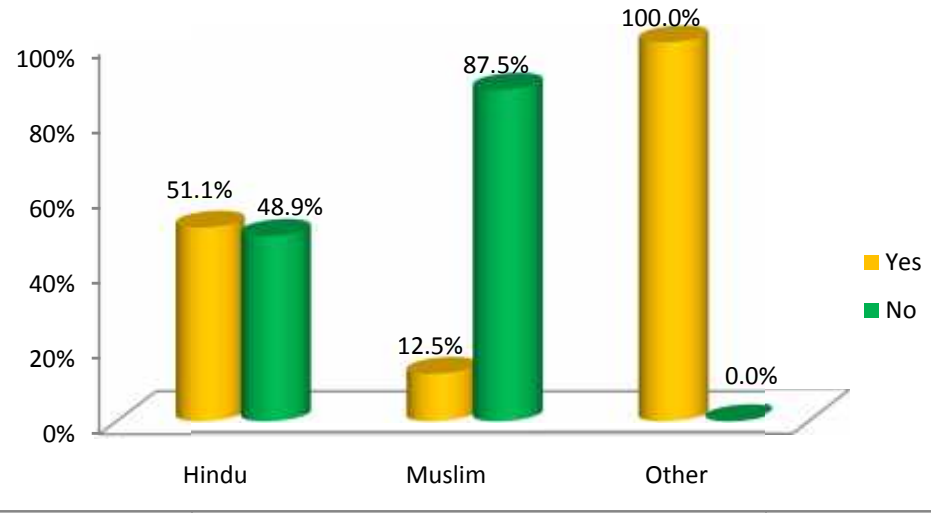


Table No. 34: Association between socio-economic status of late adolescent girls and use of sanitary pad

Socio-economic Status	Use sanitary pad		Total
	Yes	No	
Class I	51(78.5%)	14 (21.5%)	65 (100%)
Class II	85 (68.5%)	39 (31.5%)	124 (100%)
Class III	109 (61.9%)	67 (38.1%)	176 (100%)
Class IV	23 (12.9%)	155 (87.1%)	178 (100%)
Class V	3 (3.7%)	79 (96.3%)	82 (100%)
Total	**271 (43.4%)**	**354 (56.6%)**	**625 (100%)**
χ^2 = 209.1	**df = 4**		**p <0.001**
χ^2 for trends = 178.2	**df= 1**		**p <0.001**

In our study significant association was found between socio-economic status of girls and use of sanitary pad which followed a trend (p<0.001). Among the girls belonging to Class I, 51 (78.5%) of them used sanitary pads, 85 (68.5%) from Class II, 109 (61.9%) from Class III, 23 (12.9%) from Class IV and 3 (3.7%) from Class V used sanitary pads for sanitary protection during menstruation. This shows that with increase in socio-economic status there was increase in use of sanitary pads (p<0.001).

Graph 18 (Table No. 34): Association between socio-economic status of late adolescent girls and use of sanitary pad

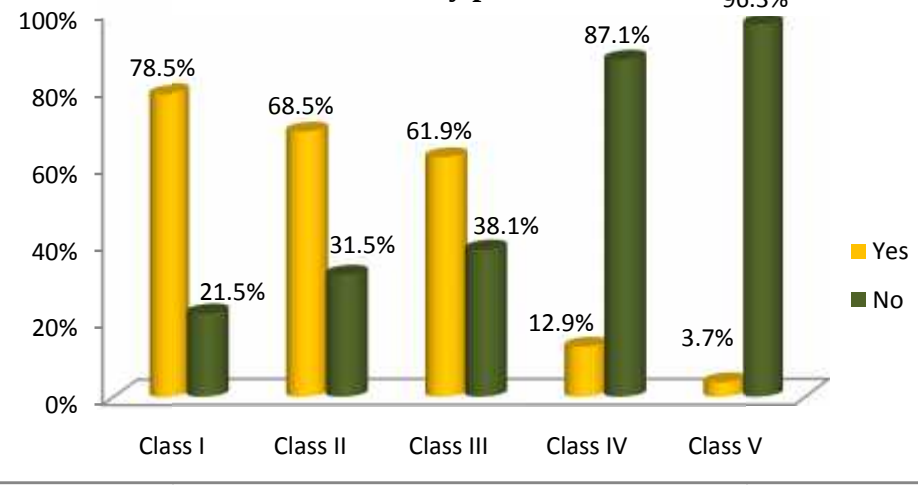


Table No. 35: Association between mothers' literacy status of late adolescent girls and use of sanitary pad

Literacy status	Use sanitary pad		Total
	Yes	No	
Illiterate	31 (22.0%)	110 (78.0%)	141 (100%)
Primary school	6 (6.2%)	90 (93.8%)	96 (100%)
High school	115 (51.1%)	110 (48.9%)	225 (100%)
PUC/Diploma	60 (83.3%)	12 (16.7%)	72 (100%)
Graduation	48 (61.5%)	30(38.5%)	78 (100%)
Post graduation	11 (84.6%)	2 (15.4%)	13 (100%)
Total	**271 (43.4%)**	**354 (56.6%)**	**625 (100%)**
χ^2 = 151.9 df = 5 p <0.001			
χ^2 for trends=101.9 df = 1 p <0.001			

In our study use of sanitary pads increased as education level of mothers' increased, it was seen to follow a trend (p<0.001). Highest use of sanitary pads during menstruation was seen among adolescents whose mothers' had perused post graduation 11 (84.6%), followed by PUC/Diploma 60 (83.3%), graduation 48 (61.5%), attended high school 115 (51.1%), illiterates 31 (22.0%) and adolescent girls whose mothers' had primary schooling 6 (6.2%) made the least use of sanitary pad which was statistically significant (p<0.001)

Graph 19 (Table No. 35): Association between mothers' literacy status of late adolescent girls and use of sanitary pad

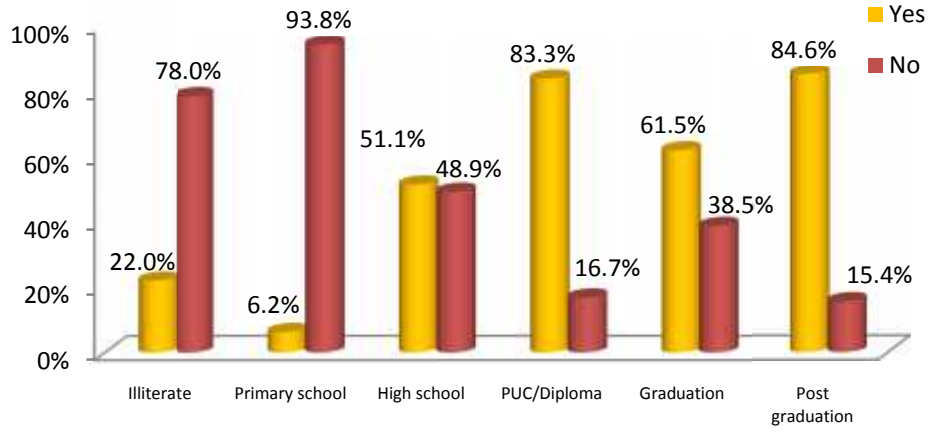


Table No. 36: Association between age of late adolescent girls and practice of perineal hygiene during menstruation

Age (in years)	Practice of perineal hygiene during menstruation		Total
	Yes	No	
16	57 (34.3%)	109 (65.7%)	166 (100%)
17	100 (62.9%)	59 (37.1%)	159 (100%)
18	81 (47.6%)	89 (52.4%)	170 (100%)
19	92 (70.8%)	38 (29.2%)	130 (100%)
Total	**330 (52.8%)**	**295 (47.2%)**	**625 (100%)**
χ^2 = 47.9 df = 3 P <0.001			

In the present study, 92 (70.8%) of the girls aged 19 years practiced cleaning external genitalia during menstruation followed by 100 (62.9%) girls aged 17 years, 81 (47.6%) aged 18 years and 57 (34.3%) aged 16 years. It was found that with increase in age practice of cleaning external genitalia increased which was statistically significant (p<0.001).

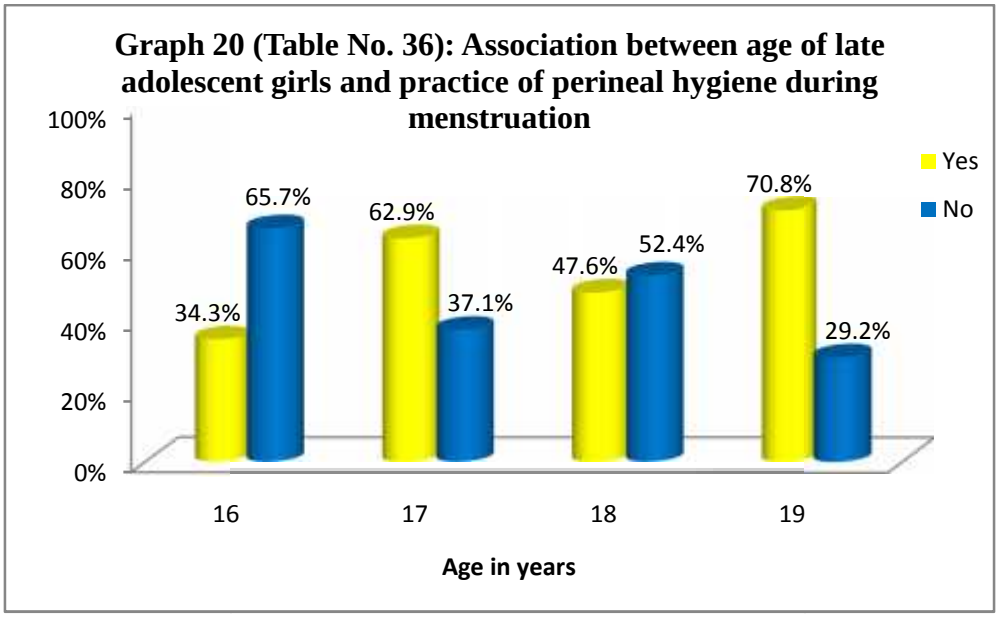


Table No. 37: Association between religion of late adolescent girls and practice of perineal hygiene during menstruation

Religion	Practice of perineal hygiene during menstruation		Total
	Yes	No	
Hindu	264 (62.4%)	159 (37.6%)	423 (100%)
Muslim	32 (19.0%)	136 (81.0%)	168 (100%)
Other	34 (100.0%)	0 (0.0%)	34 (100%)
Total	**330 (52.8%)**	**295 (47.2%)**	**625 (100%)**
χ^2 = 122.9 df = 2 p <0.001			

In our study, among the 34 girls belonging to other religion all of them were practicing cleaning external genitalia during menstruation, of 423 Hindus, 264 (62.4%) cleaned external genitalia and of the 168 Muslims only 32 (19.0%) of them practiced it during menstruation showing significant association (p <0.001) between religion and practice of perineal hygiene during menstruation.

Graph 21 (Table No. 37): Association between religion of late adolescent girls and practice of perineal hygiene during menstruation

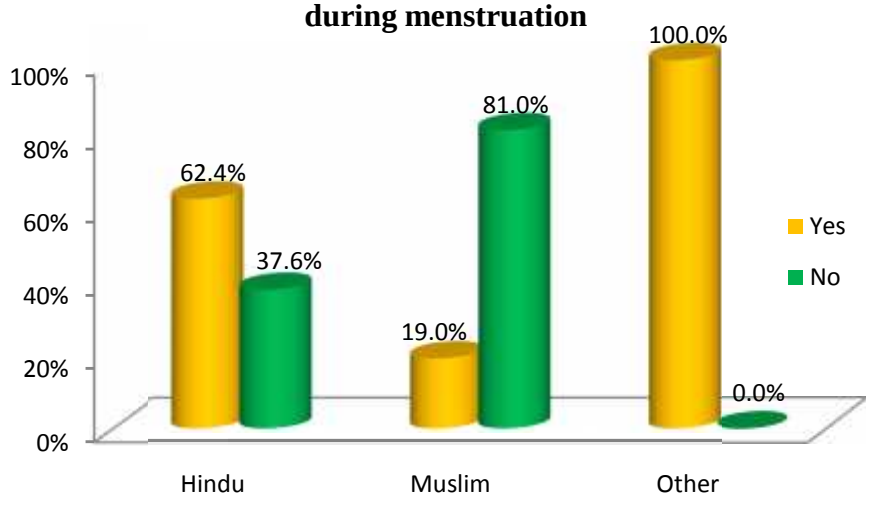


Table No. 38: Association between socio-economic status of late adolescent girls and practice of perineal hygiene during menstruation

Socio-economic Status	Practice of perineal hygiene during menstruation		Total
	Yes	No	
Class I	65 (100.0%)	0 (0.0%)	65 (100%)
Class II	74 (59.7%)	50 (40.3%)	124 (100%)
Class III	126 (71.6%)	50 (28.4%)	176 (100%)
Class IV	36 (20.2%)	142 (79.8%)	178 (100%)
Class V	29 (35.4%)	53 (64.6%)	82 (100%)
Total	**330 (52.8%)**	**295 (47.2%)**	**625 (100%)**
χ^2 = 171.2 df = 4 P <0.001			

In our study significant association was found between socio-economic status of girls and practice of perineal hygiene during menstruation (p<0.001). Among the girls belonging to Class I, 65 (100.0%) of them practiced cleaning external genitalia during menstruation, 74 (59.7%) from Class II, 126 (71.6%) from Class III, 36 (20.2%) from Class IV and 29 (35.4%) from Class V practiced perineal hygiene during menstruation. This shows that with increase in socio-economic status there was increased practice of perineal hygiene.

Graph 22 (Table No. 38): Association between socio-economic status of late adolescent girls and practice of perineal hygiene during menstruation

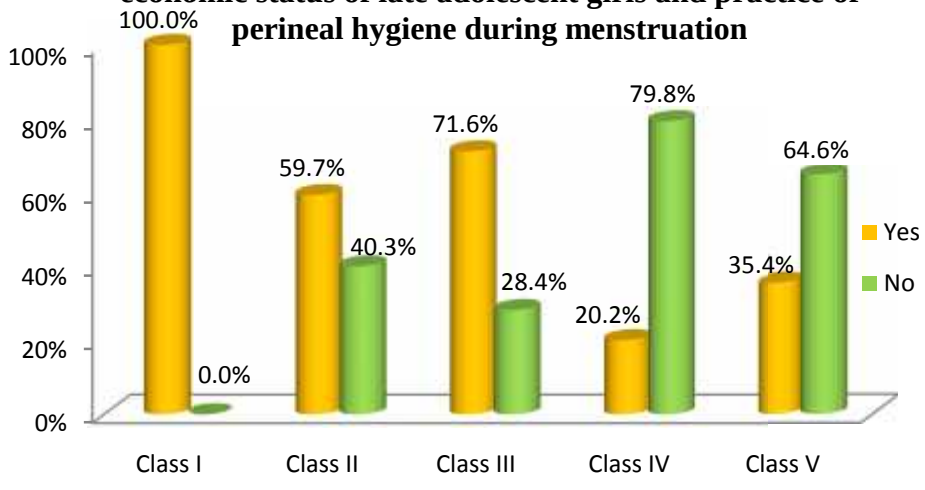
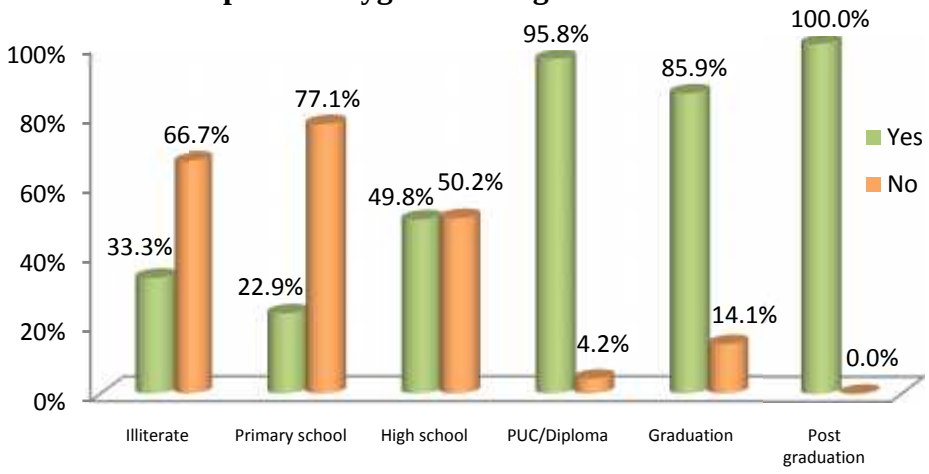


Table No. 39: Association between mother's literacy status of late adolescent girls and practice of perineal hygiene during menstruation

Literacy status	Practice of perineal hygiene during menstruation		Total
	Yes	No	
Illiterate	47 (33.3%)	94 (66.7%)	141 (100%)
Primary school	22 (22.9%)	74 (77.1%)	96 (100%)
High school	112 (49.8%)	113 (50.2%)	225 (100%)
PUC/Diploma	69 (95.8%)	3 (4.2%)	72 (100%)
Graduation	67 (85.9%)	11 (14.1%)	78 (100%)
Post graduation	13 (100.0%)	0 (0.0%)	13 (100%)
Total	**330 (52.8%)**	**295 (47.2%)**	**625 (100%)**
χ^2 = 156.1 df = 5 P <0.001			

In our study, more number of girls practiced perineal hygiene during menstruation in those mothers' who had perused post graduation 13 (100.0%), followed by PUC/Diploma 69 (95.8%), graduation 67 (85.9%), attended high school 112 (49.8%), illiterates 47 (33.3%) and adolescent girls whose mothers' had primary schooling 22 (22.9%) practiced least cleaning of external genitalia during menstruation which was statistically significant ($p<0.001$). As the maternal literacy status increased the practice of perineal hygiene by late adolescent girls also increased.

Graph 23 (Table No. 39): Association between mother's literacy status of late adolescent girls and practice of perineal hygiene during menstruation



DISCUSSION

The present study was conducted in an urban field practice area of Department of Community Medicine, J.N Medical College, Belgavi, during the period January to December 2014 among 625 late adolescent girls. The objective of this study was to assess the knowledge, belief and practice regarding reproductive health among late adolescent girls.

Table No. 1-7: Socio-demographic Profile of Adolescent girls

In the present study, 625 late adolescent girls aged 16 – 19 years were included; their mean age (±SD) was 17.4±1.09 years and median was 17.5 years. A similar study conducted in Udupi[39] among girls aged 16-19years reported that maximum of the study participants were in the age group of 16-17 years with a mean age of 16.47 years. Adolescent belonging to Hindu religion constituted 433 (69.3%) in our study which is slightly less when compared to the 2011 Census[10] report were, Hindus constitute 73.2% of the total population of Belgaum city. Majority, 530 (84.8%) of adolescent girls were studying and 95 (15.2%) of them had stopped studying at the time of study. Government policy of free education has resulted in this favourable outcome. Similarly a study in Southwest Ethopia[53] revealed that 88.2% girls were studying and 11.8% of them were dropouts. Studies conducted at Tamil Nadu[50] and Ratnagiri[51] reported literacy rate of 75.0% to 90.0% with 8.0% to 23.0% dropouts. The reasons for discontinuation of studies in our study have been marriage (23.2%), opposition by parents (15.8%), financial problems in the family (14.7%), poor scholastic performance (14.7%), security reasons (13.7%), domestic work (9.5%) and to look after siblings (8.4%). According to NFHS-2[56] data, the most

common causes for not attending school have been, education not considered necessary (13.2%), did not like school and not interested in studies (15.8%), involvement in domestic work (24.5%) and could not afford fee (24.5%). The young girl is considered as a domestic help and at the time of financial constraints the son is educated at the cost of daughters' education.

In our study, 584 (93.4%) of the fathers' of the adolescent girls were literates which is similar to the average male literacy rate of Belgaum city which is 93.5% according to 2011 census[52] and 484 (77.4%) of the mothers' of the late adolescent girls were literates which is less when compared to the average female literacy of Belgaum city which is 86.4% as per the 2011 census[10]. About 243 (38.9%) of the fathers' of the adolescent girls were in private service and 484 (77.4%) of the mothers' were housewives according to employment. Most (62.2%) of the girls belonged to nuclear families. Similar studies done in Pune[30] and Nellore[52] revealed that most of adolescents 63.4% and 78.9% belonged to nuclear families. The adolescent girls belonged to socioeconomic class IV 178 (28.5%) and class III 176 (28.2%) and 65 (10.4%) of them were from class I as per Modified B.G. Prasad Classification. In our study, of the 625 adolescent girls, 49 (7.8%) were married and among them 42 (6.7%) girls were married before 18 years of age. According to NFHS-3[8] report 46% of the Indian women marry below the legal age of marriage. No of married girls were comparatively less in our study as the study was conducted in an urban area.

Table No. 8: Age at menarche of adolescent girls

The mean age (±SD) at menarche was 12.8±1.73 years and majority of the adolescent girls, 167 (26.7%) and 144 (23.0%) were 13 and 12 years old respectively

when they attained menarche. A study conducted in Belgaum[42] reported the mean age at menarche to be 13.62± 0.91 years which is slightly higher than our study. Also, another study conducted in urban slum of Mumbai[17] revealed that majority (54.4%) of the subjects had attained menarche by the age of 13 – 14 years.

Table No. 9, 10 and 11: Knowledge regarding menstruation among adolescent girls

Majority, 494 (79.0%) of the adolescents knew that menstruation was a natural cyclical process. Similarly a study conducted in Udupi[39] showed that 72.2% of the girls knew menstruation as a natural process. Studies conducted in Mumbai[17] and Rajasthan[18] revealed that 63.9% and 60.0% of the girls respectively knew that menstruation is a natural process which is less when compared to our study. More than half, 355 (56.8%) of the adolescents knew uterus as the organ responsible for menstruation which is high when compared to the studies conducted in Mumbai[17] and Belgaum[42] which showed only 14.5% and 29.7 % of girls respectively. Majority, 529 (84.6%) of the adolescents had correct knowledge regarding the normal interval between menstrual cycles which is high as compared to studies conducted in Belgaum[42] and Udupi[39] were 78.5% and 47.8% girls knew normal interval respectively. Majority 547 (87.5%) of the adolescent girls knew that sanitar**y** pads were ideal material to be used during menstruation which is higher when compared to a study conducted in Mumbai[17] were 72.5% knew sanitary pads as ideal material.

Among the 416 (66.6%) adolescent girls who were aware about menstruation before menarche, major source of information were mothers (44.5%), teachers (18.0%), sisters (16.0%) and friends (12.3%). A similar study conducted in East Delhi[22] reported that 45.7% of the girls who had attained menarche and 29.0% of pre

pubertal subjects had prior knowledge about menstruation and mothers (41.0%) were the most common source of information about menstruation, followed by elder sisters (22.4%) and friends (21.0%). Our study revealed that 100% of the adolescent girls knew that menstruation begins when the pubertal changes are complete. Knowledge regarding pubertal changes among study participants varied between fair to poor. Knowledge regarding changes like increase in breast size 449 (71.8 %), facial skin becomes oily 428 (68.5%), axillary and pubic hair growth 368 (58.9%), appearance of acne on the face 339 (54.2%) and increase in height 304 (48.6%) was fair enough whereas, knowledge regarding broadening of hips 144 (23.0%) and increase in weight 133 (21.3%) was poor. A study conducted in Karapa mandal East Godavari[25] revealed that 58.3% of girls had knowledge about growth spurt, 55.8% about breast enlargement, 65.0% girls about pubic and axillary hair growth which was slightly different from our study. In contrast with our study, another study conducted in Dharwad[24] showed that 56.7% girls knew about primary sex characteristics (menses) and few respondents knew about secondary sex characteristics such as height and weight (75.0%), pubic hair (19.2%), breast enlargement (14.4%) and hips enlargement (9.6%). The overall knowledge regarding menstruation is comparatively good in our study, this could be due to the difference in the age group of the participants and the Information, Education and Communication activities carried out in the study area which is a field practice area of J.N. Medical College.

Table No. 12: Knowledge regarding Reproductive health among adolescent girls

In our study, 221 (35.4%) adolescents knew about ovulation and 293 (46.9%) regarding fertilization which is less when compared to the study undertaken in Udupi[39] were 46.5% of girls knew about ovulation and 54.5% about fertilization.

Regarding perineal hygiene, 464 (74.3%) girls knew that poor perineal hygiene predisposes to RTI which is slightly more when compared to the study conducted in Bangladesh[53] were 68.3% of the girls knew about it. More number of girls knew the legal age of marriage for female 428 (68.5%) as compared to legal age of marriage for male 345 (55.2%) in India which is slightly more when compared to a study which was conducted in Dharwad[24] were 56.0% of the girls knew the legal age of marriage for female.

Table No. 13, 14 and 15: Knowledge regarding Antenatal and Postnatal care, Abortion and Contraception

Majority, 607 (97.1%) of the girls knew that regular antenatal checkups were essential during pregnancy and 538 (86.1%) girls knew that post natal care was also essential. Similar results were reported from a study conducted in Udupi[39] in which 98.1% girls felt regular antenatal checkups were essential. Our study found that 196 (31.4%) girls knew the ideal interval between pregnancies which is less when compared to a study conducted in Puducherry[54] were 44.9% of the girls knew regarding spacing.

Nearly, 290 (46.4%) of the adolescents knew that abortion is legalized in India. Only 21 (7.2%) of girls knew that the legal abortion could be carried out till 20 weeks of gestation and 205 (32.8%) girls knew it could be conducted in both government and private hospitals which is similar to a study conducted in Haryana[27] were 39.7% knew that it can be performed at both government and private health facilities.

In our study, 340 (54.4%) of girls knew at least one method of contraception, 86 (13.8%) knew more than one method and 199 (31.8%) did not know any of the methods. Most commonly known methods were condom (21.0%) and oral pills (17.8%). About 369 (59.0%) of the adolescent girls knew about emergency contraception but among them only 21.9% knew the correct methods. A study conducted in Jammu[29] revealed two thirds of the study population were aware of condoms (62.0%) as contraceptives and nearly equal number (59.0%) were knowledgeable of female sterilization. Another study conducted in Visakhapatnam[20] revealed that, 64.5% of the girls have had heard about contraceptives, of which most of the girls (63.3%) had knowledge of at least two or more modes of contraception. The findings from both the studies differed from our study.

Table No. 16: Knowledge regarding Reproductive tract infections among adolescent girls

In was found that, 316 (50.6%) of the adolescents knew at least one symptom of RTIs and 47 (7.5%) knew about two or more symptoms of RTI. White discharge per vagina (18.1%), low backache (11.1%), urinary tract infection (8.3%), menorrhagia (6.9%) were the most common symptoms known. A study conducted in Jammu[29] found that, 32.0% of girls were aware of two or more symptoms of R.T.I followed by itching over vulva (26%), ulcers of vulva (35%), lower abdominal pain (13%), pain during intercourse (11%), abnormal vaginal discharge (37%), abnormal bleeding (17%). Nearly half, 359 (47.5%) of the participants were aware about the long term effects of RTI and the long term effects noted were infertility (32.5%), persistent abdominal pain (12.8%), UTI (9.8%) and chronic backache (2.4%).

Table No. 17 and 18: Knowledge regarding HIV/AIDS among adolescent girls

Nearly half, 317 (50.7%) and 285 (45.6%) of adolescents correctly knew the full form of HIV and AIDS respectively which is higher than a study conducted in Dharwad[24] were 24.0% and 35.0% of the girls knew the abbreviation of HIV and AIDS respectively. In our study, 312 (49.9%) the girls of knew one mode and 251 (40.2%) knew more than one mode of disease transmission and 30 (4.8%) did not know how it spreads. The various modes of disease transmission known were blood transfusion (20.6%), sexual intercourse (14.6%), parent to child (7.7%), sharing/used needles (7.0%). There were also some misconceptions like mosquito bite (3.0%), kissing (1.9%) and swimming in the pool with HIV infected individual (0.2%) would lead to disease transmission. A study undertaken in Solapur[33] reported that 15.8% adolescents said that HIV/AIDS transmits through unsafe sex, 23.5% through contaminated blood transfusion, 4.8% through mother to child during pregnancy and child birth, 12.0% through breast feeding, 6.0% by sharing contaminated needles/syringes, and 54.3% were not aware exactly how HIV/AIDS transmits from one person to another which is slightly different from our study results. Majority, 526 (84.2%) of the adolescent girls knew one or the other ways by which HIV infection doesn't spread and 99 (15.8%) girls did not know about it. Most common ways known were, sharing meals (19.7%), playing together (14.6%), shaking hands or by touching (11.7%). Also, Majority 93.6% of the girls knew one or more measures for prevention against HIV transmission which is comparatively more to a study conducted in Delhi[35] were 72.4% of girls had knowledge regarding prevention of HIV. The overall higher level of knowledge regarding HIV can be attributed to National AIDS Control Program II, 1999-2006; which took the challenge of increasing prevalence of HIV in adolescents seriously and introduced the School

AIDS Education Programme (SAEP) in the 9th and 11th grades on a voluntary basis throughout India.

Table No. 19, 20 and 21: Belief regarding Reproductive Health and Menstruation.

In this study, 452 (72.3%) of the girls believed that the sex education should be provided in high school. A study done at Chattisgarh[55] found that 90.4% wanted sex education in school curriculum which is high when compared to our study. Most 321 (51.4%) of the girls believed that both husband and wife were responsible for the sex of the child and only 78 (12.5%) correctly believed husband was responsible whereas a study conducted in Rajasthan[18] showed, 20.0% of the girls believed that both husband and wife were responsible for the sex of the child. Around 276 (44.2%) of the girls believed that long term usage of contraception will lead to infertility which is similar to the misconception that contraceptives predispose women to both primary and secondary infertility in the study conducted in southern and northern Ghana[56]. In this study 63.7% of the respondents believed that condom provides protection against STD/HIV which was slightly high when compared to a study done in South Delhi[34] were 59.0% believed condoms provided protection against STD/HIV and 22% weren't sure on this. In our study 284 (45.5%) of the adolescent girls believed that consumption of raw papaya may cause abortion, 483 (77.3%) believed that the colostrum should be given to the newborn and 493 (78.9%) of the girls thought water should not be restricted during post natal period. A study conducted in Chamba district, Himachal Pradesh[57] showed only 20.0% of the adolescents thought that the colostrum should be given to newborn to protect against illness.

More than half, 353 (56.5%) of the adolescent girls believed that there should be no restriction to any kind of food, 456 (73.0%) believed it should be taken daily and 44 (7.0%) twice a day, 456 (73.0%) girls believed that girls should sleep in same usual place during menstruation, 417 (66.7%) of the girls believed that girls could help mother in kitchen during menstruation and 588 (94.1%) of the girls believed that girls shouldn't go to place of worship during menstruation. A study in Pune[30] revealed that 99.0% of girls were taking bath daily and two girls on alternate days and a study conducted in Belgaum[42] revealed that 41.6% and 98.3% had restrictions on entering kitchen and attending religious activities respectively.

Table No. 22: Menstrual practices of adolescent girls

Less than half, 43.4% of the adolescent girls used sanitary pads, 207 (33.1%) used cloth, 139 (22.2%) used both sanitary pads and cloth as per the availability and 8 (1.3%) used tampon. It was noted that in a study conducted in Guntur[58] 53.7% girls used sanitary pad for protection during menstruation which is slightly high when compared to our study. Among cloth users, 218 (63.0%) used reused cloth and 128 (37.0%) used fresh cloth every cycle. Regarding hygiene practices during menstruation, 330 (52.8%) of the girls practiced cleaning of external genitalia during menstruation and the most common ways of disposing sanitary pads were, wrapping in paper and throwing in dustin (69.3%) and threw it indiscriminately (16.3%). Similar observations were made in a study conducted in Mumbai[17], were 54.8% disposed sanitary pads in dustbin and 14.5% of them threw them indiscriminately.

Table No. 23 and 24: Menstrual and Reprouctive health problem and treatment seekig behaviour among adolescent girls

About 228 (36.5%) of the adolescent girls had menstraul problems and the most common complaints were dysmenorrhoea (20.6%) and oligomenorrhoea (10.3%). Of these girls, 50 (21.9%) approached gynaecologist for treatment, 45 (19.8%) took self medication, 29 (12.7%) approached a qualified doctor and 102 (44.7%) did not seek any treatment. Regarding reproductive health, 150 (24.0%) of girls had reproductive tract infections and most common problems were burning micturition (9.9%) and white discharge per vagina (7.0%). Regarding treatment seeking behaviour for reproductive tract problems, only 1 (0.7%) approached a gynaecologist unlike for menstrual problems, 104 (69.3%) approached a qualified doctor, 21 (14.0%) sought the help of anganwadi worker and 23 (15.3%) did not do anything for the problem. Treatment seeking practice was more for reproductive tract problem as compared to menstrual problems. However, more number of girls having menstrual problem approached a gynaecologist as compared to only 0.7% of girls who approached a gynaecologist for reproductive tract problem. A study conducted in Nagpur[23], found that 65.2% were having one or more reproductive morbidity. A high prevalence of dysmenorrhoea 53.6% was found among adolescent girls. Other common morbidities were menorrhagia (16.1%), irregular cycles (11.2%) and a few girls (5.4%) reported of having excessive white discharge. Only 33.7% girls sought heath care and 62.3% girls remained silent without seeking health care.

Table No. 25, 26 and 27: Gap in Knowledge and Practice of adolescent girls

Our study reported that increase in knowledge, lead to increase in correct practice. With increase in knowledge both use of sanitary pads and cleaning of

external genitalia during menstruation increased significantly. However, even after having correct knowledge regarding menstruation, 276 (50.5%) of girls did not use sanitary pads and 175 (37.7%) did not clean external genitalia showing a gap in knowledge and practice. In the present study, no significant association was found between married and unmarried girls and their knowledge regarding legal age of marriage.

Table No. 28, 29, 30 and 31: Gap in Knowledge and belief of adolescent girls

Our study showed that with increase in correct knowledge regarding menstruation there was significant increase in right belief regarding sleeping place, helping mother in kitchen, going to place of worship and avoiding certain food during menstruation. However, not all the girls who had correct knowledge had right beliefs' regarding the restrictions during menstruation showing a gap in knowledge and belief among adolescent girls.

Table No. 32, 33, 34 and 35: Association between socio-demographic factors and use of sanitary pads

In our study, it was found that increase in age, socio-economic status, and mother's literacy status all were significantly associated with the increase in use of sanitary pads among girls. Girls belonging to Muslim religion made least use of sanitary pads compared to girls belonging to other and Hindu religion. Similarly in a study conducted in South India[59], socioeconomic Status of the girls and their age influenced the use of sanitary pads. With the increase in socio-economic status and age there was increase in use of sanitary pads among girls. Other studies have shown that lower socio-economic status, lack of access to information about menstruation

and money to buy sanitary products for menstrual hygiene are all related factors affecting menstrual behaviors[60, 61].

Table No. 36, 37, 38 and 39: Association between socio-demographic factors and practice of perineal hygiene

Our study reported significant association between socio-demographic variables and perineal hygiene. Factors like younger age of girls, girls belonging to Muslim religion, lower socio-economic status and illiteracy or low literacy status among mothers' of the adolescent girls were associated with poor practice of perineal hygiene. A study conducted in South India[59] found that 83.0% of the girls regardless of their age used to practice washing of genital area.

CONCLUSION

The present community based cross-sectional study reported good knowledge among the late adolescent girls regarding reproductive health, particularly on menstruation and HIV/AIDS. Nearly half of the study participant knew about abortion and more than half of them knew about contraception and reproductive tract infections which needs to be improved. There were few misconceptions about HIV disease transmission, person responsible for the sex of the child and wrong beliefs' regarding reproductive health and various restrictions practiced during menstruation. Less than half of the adolescent girls used sanitary pads and about more than half of the girls practiced perineal hygiene. Treatment seeking practice for menstrual and reproductive tract problems was on the better side, but specialist care was sought by very few of them.

There was a gap in knowledge, belief and practice among adolescent girls which needs to be addressed. Factors like age, religion, socio-economic status and mothers' literacy were found, to have made a significant impact on use of sanitary pads and practice of perineal hygiene. Therefore, community based outreach programmes and social marketing of sanitary pads may lead to better hygiene practices among adolescents.

SUMMARY

The present study was a community based cross sectional study undertaken to assess the knowledge, belief and practice regarding reproductive health among late adolescent girls. The study included 625 adolescent girls aged between 16 - 19 years residing in Ashoknagar – an urban field practice area of Department of Community Medicine, J. N. Medical College, Belagavi. The duration of study was one year from 1st January to 31st December 2014. After obtaining informed consent, the participants were interviewed using pre-designed and pre-tested questionnaire.

The mean age (±SD) of the study participants was 17.4±1.09 years and median was 17.5 years. Majority, 84.8% of adolescent girls were studying and 15.2% of them had stopped studying at the time of our study. About 77.4% of the mothers' of the late adolescent girls were literates and most (62.2%) of the adolescent girls belonged to nuclear families. The adolescent girls belonged to socioeconomic class IV (28.5%), class III (28.2%) and 10.4% of them were from class I as per Modified B.G. Prasad Classification. Of the 625 adolescent girls, 7.8% were married and among them 6.7% girls were married before 18 years of age. The mean age (±SD) at menarche was 12.8±1.73 years.

Majority, 79.0% of the adolescents knew that menstruation was a natural cyclical process. More than half, 56.8% of the adolescents knew uterus as the organ responsible for menstruation and 87.5% of them knew that sanitary pads were ideal material to be used during menstruation. Among the 66.6% adolescent girls, who were aware about menstruation before menarche, major source of information were

mother (44.5%), teacher (18.0%), sister (16.0%) and friend (12.3%). Knowledge regarding pubertal changes among study participants varied between fair to poor.

About 35.4% adolescents knew about ovulation and 46.9% regarding fertilization. Regarding perineal hygiene, 74.3% girls knew that poor perineal hygiene predisposes to RTI. More number of girls knew the legal age of marriage for female (68.5%) as compared to legal age of marriage for male (55.2%) in India. Majority, 97.1% of the girls knew that regular antenatal checkups were essential during pregnancy and 86.1% girls knew that post natal care was also essential. Nearly, 46.4% of the adolescents knew that abortion is legalized in India but among them only 7.2% of girls knew that the legal abortion could be carried out till 20 weeks of gestations and 32.8% girls knew it could be conducted in both government and private hospitals.

More than half, 54.4% of girls knew at least one method of contraception, 13.8% knew more than one method. Most commonly known methods were condom (21.0%) and oral pills (17.8%). About 59.0% of the adolescent girls knew about emergency contraception but among them only 21.9% knew the correct methods. Nearly half, 50.6% of the adolescents knew at least one symptom of RTIs and 7.5% knew about two or more symptoms of RTI. White discharge per vagina (18.1%), low backache (11.1%), urinary tract infection (8.3%), menorrhagia (6.9%) were the most common symptoms known.

Nearly half, 50.7% and 45.6% of adolescents correctly knew the full form of HIV and AIDS respectively. About 49.9% the girls of knew one mode and 40.2% knew more than one mode of disease transmission. The various modes of disease transmission known were blood transfusion (20.6%), sexual intercourse (14.6%), parent to child (7.7%), sharing/used needles (7.0%). Majority, 84.2% of the

adolescent girls knew one or the other ways by which HIV infection doesn't spread. Also, 93.6% of the girls knew one or more measures for prevention against HIV disease transmission.

Most of the girls (72.3%) believed that the sex education should be provided in high school. About 51.4% of the girls believed that both husband and wife were responsible for the sex of the child and only 12.5% correctly believed only husband was responsible. Around 44.2% of the girls had misconception that long term usage of contraception will lead to infertility and 45.5% of the adolescent girls believed that consumption of raw papaya may cause abortion. Most of them 77.3% believed that the colostrum should be given to the newborn and 78.9% of the girls thought water should not be restricted during post natal period.

More than half, 56.5% of the adolescent girls believed that there should be no restriction to any kind of food, 73.0% believed bath should be taken daily and 7.0% twice a day, 73.0% girls believed that girls should sleep in same usual place during menstruation, 66.7% of the girls believed that girls could help mother in kitchen during menstruation and 94.1% of the girls believed that girls shouldn't go to place of worship during menstruation.

Less than half, 43.4% of the adolescent girls used sanitary pads, 33.1% used cloth, 22.2% used both sanitary pads and cloth as per the availability and 1.3% used tampon. Among cloth users, 63.0% used reused cloth and 37.0% used fresh cloth every cycle. Regarding hygiene practices during menstruation, 52.8% of the girls practiced cleaning of external genitalia during menstruation and the most common ways of disposing sanitary pads were, wrapping in paper and throwing in dustin (69.3%) and threw it indiscriminately (16.3%).

About 36.5% of the adolescent girls had menstrual problems and the most common complaints were dysmenorrhoea (20.6%) and oligomenorrhoea (10.3%). Of these girls, 21.9% approached gynaecologist for treatment, 19.8% took self medication, 12.7% approached a qualified doctor and 44.7% did not seek any treatment. Regarding reproductive health, 24.0% of girls had reproductive tract infection and most common problems were burning micturition (9.9%) and white discharge per vagina (7.0%). Of these girls, only 0.7% approached a gynaecologist unlike for menstrual problems, 69.3% approached a qualified doctor, 14% sought the help of anganwadi worker and 15.3% did not do anything for the problem. Treatment seeking practice was more for reproductive tract problem as compared to menstrual problems.

With increase in knowledge both use of sanitary pads and cleaning of external genitalia during menstruation increased significantly. However, even after having correct knowledge regarding menstruation, 50.5% of girls did not use sanitary pads and 37.7% did not clean external genitalia showing a gap in knowledge and practice. Also, with the increase in correct knowledge regarding menstruation there was significant increase in right belief regarding sleeping place, helping mother in kitchen and avoiding certain food during menstruation. However, not all the girls who had correct knowledge had right beliefs' regarding the restrictions during menstruation showing a gap in knowledge and belief among adolescent girls.

Increase in age, socio-economic status, and mother's literacy status all were significantly associated with the increase in use of sanitary pads among girls. Girls belonging to Muslim religion made least use of sanitary pads compared to girls belonging to other and Hindu religion. Also, there was significant association between

socio-demographic variables and perineal hygiene. Factors like younger age of girls, girls belonging to Muslim religion, lower socio-economic status and illiteracy or low literacy status among mothers' of the adolescent girls were associated with poor practice of perineal hygiene.

LIMITATIONS

The limitations of the study are:

- The study was conducted in field practice area of J.N. Medical College. Most areas are regularly visited by Post Graduate students, interns and other health staff and Information, Education and Communication activities are carried out. This may have influenced the outcome and thereby may not be representative of the population of Belagavi.
- The study was conducted among late adolescent girls, 16-19 years old. Therefore the results are applicable to only late adolescent girls.

RECOMMENDATIONS

Based on the findings of our study, the following recommendations are being suggested for the overall development of health among adolescent girls:

- Designing and implementing health educational programmes about changes occurring during puberty and necessity of menstrual hygiene and the replication of the same program among primary and secondary schools to improve knowledge, belief and practice of adolescent girls regarding menstruation.
- Social marketing of sanitary napkin should be promoted to avoid unhygienic practices which were quite prevalent in our study.
- More information on human sexuality, conception and contraception should be made available early, at high school level, to eliminate misconceptions regarding contraceptives.
- Peer educational programmes should be initiated. These programmes will influence a positive attitude, behaviour and enable them to make decisions about safe sex.
- The Adolescent Education Programme (AEP) reaches only the school children, and not the large segment of out-of-school girls. Therefore a programme to address out-of-school children needs to be designed.
- To bridge the gap between knowledge, belief and practice among adolescent girls, causes have to be identified and addressed.

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ANNEXURE I – ETHICAL CLEARANCE CERTIFICATE

K.L.E.SOCIETY'S
JAWAHARLAL NEHRU MEDICAL COLLEGE,
NEHRU NAGAR, BELGAUM-590010 (KARNATAKA-INDIA)
(Affiliated to KLE University, Belgaum)

Website: http/www.jnmc.edu
E-Mail : domejnmc@sancharnet.in
: jnmc@sancharnet.in

Phone: (+ 91-(0)831 Office : 2471350
Principal: 2471701
Fax No. +91 (0)831 – 2470759

Ref: MDC/DOME/ 92 **Date: 07/12/2013**

To,

(REG. NO.BD0113006) ine,

BELGAUM.

Sub: Institutional Ethical Clearance for the study.

With reference to the above, we wish to inform you that your proposed research project titled **"KNOWLEDGE, BELIEFS AND PRACTICES REGARDING REPRODUCTIVE HEALTH AMONG LATE ADOLESCENT GIRLS IN AN URBAN AREA OF BELGAUM,"** is ethical and justifiable. The proposed research project has been cleared by the JNMC Institutional Ethics Committee on Human Subjects Research.

(Dr.Hema Dhumale)
Member Secretary
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belgaum.

(Dr.Ganga Pilli)
Chairman,
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belgaum.

ANNEXURE II – CONSENT FORM

INFORMED CONSENT(18-19 years)

KNOWLEDGE, BELIEF AND PRACTICE REGARDING REPRODUCTIVE HEALTH AMONG LATE ADOLESCENT GIRLS IN AN URBAN AREA OF BELGAUM

INVESTIGATORS: _____

Introduction:

You are being invited to participate in this study to find out "Knowledge, belief and practice regarding reproductive health among late adolescent girls". Participation in this study is completely voluntary. The study will be carried out in Ashoknagar field practice area Belgaum. By knowing the misbeliefs and wrong practices, we can aim at giving specific interventional program. With the prevalence of HIV/AIDS increasing in the adolescent group, it is very important to assess the knowledge about reproductive health.

Explanation of Procedures:

In this study you will have to answer a few prepared questions about your education, income, menstrual history and some other details. Few questions will be on menstrual hygiene, contraception, abortion and some on sensitive problems like white discharge, STDs, HIV/AIDS. The entire procedure may take about 20-30 minutes. If you agree to participate, I will collect the required information during my visit.

Possible benefits:

You will not be eligible for any kind of monetary benefits or free services by virtue of your participation in the study. You will be benefitted by the health education given during the study regarding reproductive health.

Possible risks:

No risk is involved in the study.

Cost of participation:

You will not have any costs attached to your participation.

Legal rights:

By signing this consent form you are not waiving any of your legal rights.

Privacy and Confidentiality:

The results of the study may be published for scientific purposes. However your identity will not be revealed. All information collected will be coded so that no one other than the investigator will know your identity.

Withdrawal from the study:

Participation in this study is voluntary. If you don't wish to participate in this study, you will not lose benefits to which you are entitled. You can withdraw from the study at any time if you wish to do so.

Authorization to publish the results:

The researcher may use the information gathered from this study for presentation in scientific journals. However your identity will not be revealed.

Questions:

If you have any questions about rights as a research participant you can contact Dr. Ganga Pilli, Chairman, J. N. M. C Institutional Ethics Committee on human subjects research on 0831-2741701.

Consent summary:

"I volunteer and consent to participate in the study. I have read (or it has been read to me in the language known to me) the information sheet thoroughly. Full opportunity was given to me to ask questions. I am fully satisfied with the answers to the questions I wanted to ask. I hereby voluntarily agree to participate in this research project".

Name of the participant	Signature of the participant
Name the Investigator	Signature of the Investigator
Name of Witness	Signature of Witness

Date:

Place:

ASSENT FORM (16-17years)

KNOWLEDGE, BELIEF AND PRACTICE REGARDING REPRODUCTIVE HEALTH AMONG LATE ADOLESCENT GIRLS IN AN URBAN AREA OF BELGAUM

I have read the information in this form. After understanding all details about the study, I agree to give assent to be included as a volunteer in the study titled "Knowledge, belief and practice regarding reproductive health among late adolescent girls in an urban area of Belgaum".

Name of the participant	Signature of the participant
Name of the parent	Signature of the parent
Name the Investigator	Signature of the Investigator
Name of Witness	Signature of Witness

Date:

Place:

ANNEXURE III – PROFORMA

KNOWLEDGE, BELIEFS AND PRACTICES REGARDING REPRODUCTIVE HEALTH AMONG LATE ADOLESCENT GIRLS IN AN URBAN AREA OF BELGAUM

Serial No:

Socio-demographic data:

A) Name

B) Age: _____years

C) Address

D) Religion: 1. Hindu 2. Muslim 3. Other specify _____

E) Literacy status: Studying/ Not studying

a) If studying, which class: _____

b) If not studying, at which class did you stop studying: _____

c) Reason for dropout: _____

F) Father's education: _____

G) Mother's education: _____

H) Father's occupation: _____

I) Mother's occupation: _____

J) Marital status: Married/unmarried

K) Husband's Education(if married): _____

L) Husband's occupation: _____

M) Type of Family: 1. Nuclear 2. Joint 3. Broken

N) Monthly Income of Family: Rs _____/month

O) Total Number of Family Members: _____

P) Per Capita Income:

Socio Economic Status (Modified BG Prasad's classification): - I \ II \ III \ IV \ V

Q) Menstrual History:

1. Age of Menarche: _____years

If married:

2. Age of marriage: _____years

3. Duration of Married life:_____ years

G____ P____L____A____

Questionnaire to assess knowledge:

1) Menstruation is a normal process? Yes/ No

2) Were you aware about menstruation before menarche? Yes / no

If yes, then who was the informant? a) Mother b)Sister c) Friend d) Relative e)Teacher f) Any other, specify_____

3) Which organ in the human body is responsible for menstruation?

a) Kidney b) Uterus c) Liver d) Stomach

4) What is the normal interval between menstrual cycles? :____ days

5) What are the changes noted in the female human body during puberty?

a. Menstruation starts Yes/ No

b. Breast size increases Yes/ No

c. Growth of pubic and axillary hair Yes/ No

d. Broadening of the hips Yes/ No

e. Appearance of facial acne Yes/ No

f. Facial skin becomes oily Yes/ No

g. Increase in height Yes/ No

h. Increase in weight Yes/ No

6) Do you know what is ovulation? Yes / No

7) Do you know what is fertilization? Yes / no

8) Which material should ideally be used during menstruation?

a) Sanitary pads b) Cloth

9) Does poor perineal hygiene predispose to reproductive tract infection? Yes / No

10) What is the legal age of marriage for male in India? _____ years

11) What is the legal age of marriage for female in India? _____ years

12) Do you think regular checkups are essential during pregnancy? Yes / No

If yes, how often_____

13) Do you think regular checkups are essential after delivery? Yes / No

If yes, how often_____

14) What should be the ideal time interval between pregnancies? _____years

15) Is abortion legal in India? Yes / No / Don't know

If yes, till what duration of pregnancy legal abortion is allowed? _____

16) Under MTP Act abortion is conducted in which hospital?

a) Government b) Private c) Both

17) Name some contraceptive methods: _____

18) Name some emergency contraceptive methods: _____

19) What are the symptoms of RTI? _____

20) What are the long term health effects of RTI?

a) Chronic backache b) Persistent abdominal pain c) UTI d) Infertility

21) What is the full form of HIV/ AIDS? _____

22) HIV/AIDS spreads by_____

23) HIV/AIDS does not spread by_____

24) HIV/AIDS can be prevented by_____

Questionnaire on belief

1) Who is responsible for the sex of the child? a) Husband b) Wife c) Both

2) Does consumption of unripe papaya during pregnancy cause abortion? Yes/No

3) Does long term usage of contraceptives leads to infertility? Yes/ No

4) Does usage of condom provide protection against STD/AIDS? Yes / No

5) Should sex education be given in high school? Yes / No

If no, why? _____

6) During postnatal period should water consumption by mother be restricted? Yes? No

If yes, why? _____

7) Should colostrum be given to the newborn? Yes / No

If no, why? _____

8) Do you avoid intake of any foods during menstruation? Yes / No

If yes, which food? _____

9) During menstruation bath should be taken:

a) Everyday b) Alternate days c) On 3rd day d) Don't take bath

10) During menstruation where should the girl sleep?

a) Same place b) Change place

11) Can the girl help her mother in kitchen during menstruation? Yes / No

12) Can the girl go to place of worship during menstruation? Yes / No

Questionnaire on practice

1) What material do you use during menstrual cycles?

a. Sanitary pad b. Cloth c. Both pad and cloth d. Tampon

2) If sanitary pad, then how do you dispose it? _____

3) If cloth, do you use fresh cloth per cycle or reuse the cloth?

4) If reusing cloth, after how many cycles do you discard it? times

5) Do you clean your external genitalia separately while taking bath during menses? Yes/ No

6) Did you have any menstrual problems? Yes / No

If yes, then what is the problem? _____

What did you do for the problem?

a) Consulted anganwadi worker b) Consulted a Doctor c) Consulted a Gynaecologist d) Home remedy e) Did not do anything

7) Did you have any problems related to reproductive tract? Yes/ No

If yes, which of these:

a) White discharge b) Itching c) Burning micturition

d) Any other, specify_____

What did you do for the problem?

a) Consulted anganwadi worker b) Consulted a Doctor c) Consulted a Gynaecologist d) Home remedy e) Did not do anything