A Study On The Knowledge, Attitude and Self-Efficacy On Reproductive and Sexual Health among Higher Secondary Students in Tiruvallur District, Tamil Nadu, India.

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CERTIFICATE

This is to certify that the dissertation entitled **"A study on the Knowledge, Attitude and Self-Efficacy on Reproductive and Sexual Health among Higher Secondary Students in Tiruvallur District, Tamil Nadu, India"** is the bonafide work done by **Dr. A. CHITRA,** Post Graduate student in the Institute of Community Medicine, Madras Medical College, Chennai- 600003 under my guidance towards the partial fulfillment of the requirement for the degree of M.D.BRANCH XV COMMUNITY MEDICINE and is being submitted to The Tamil Nadu Dr. M.G.R. Medical University, Chennai.

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CONTENTS

1. INTRODUCTION

Adolescents constitute about 21 percent of the total population[1] and their health issues are the most neglected in India. The problems we face are many, like there is a difficulty in categorizing adolescents into pediatric or adult systems of care, the lack of access of many teenagers to medical services, and the fact that the young people are most likely to become infected with sexually transmissible infections but they are often those who are the most disenfranchised. All of these factors contribute to a disturbing current trend, which is that adolescents comprise an increasing percentage of new cases with sexually transmissible infections and HIV infections both in developing and in developed countries.

Young people often have less access to information, services and resources than those who are older. Health services are rarely designed specifically to meet their needs, and health workers only occasionally receive specialist training in issues pertinent to adolescent sexual health. It is perhaps not surprising therefore that there are particularly low levels of health seeking behaviour among adolescents. Most importantly, legislation and policies which prevent sex education taking place, or

which restrict its contents, prevent many young girls and boys from maximizing their sexual and reproductive health.

India is the largest democracy in the world. In absolute terms, India is the fastest growing country globally with 18 million people added annually. It is a nation of contrasts, diversity, and tremendous development potential, with a society that is multilingual and multi religious with a multitude of castes, ethnic groups, and cultures.

The number of adolescents (age 10-19years) is increasing and comprises over one-fifth of the population. Adolescent girls have limited choices and are caught in the cycle of early marriage, repeated pregnancies and childbearing. In India, early marriage receives religious and social sanction. Despite laws increasing the legal age of marriage to 18 for girls, there are strong cultural pressures on parents to marry their daughters early. 15.4% girls are married by age 13 years. 33.3% by the time they are 15 years and 64.6% girls are married by 18 years[2]. The median age at first marriage is 16.4 years (18.4 in urban and 15.8 in rural girls) and age at first cohabitation is 17 years (18.6 for urban and 16.6 for rural girls)[3]. In addition to the psychological immaturity of an adolescent bride, very often her body is not prepared to accommodate the early onset of childbearing.

For young girls in India, poor nutrition, and early childbearing and reproductive health complications compound the difficulties of adolescent physical development. Anaemia is one of the primary contributors to maternal mortality (maternal mortality is five times higher in anaemia women) and is associated with the progressive physical deterioration of girls aged 10-19 years. Nutritional deprivation, increased demand of her body, excessive menstrual loss, and early/frequent pregnancies all aggravate and exacerbate anaemia and its effects.

Young boys in India face different set of problems and have needs, equally sensitive as those of girls. However, the entrenched patriarchal familial, societal, institutional practices in India and their own geographical areas and cultures do not allow them to express their problems and needs easily. Their issues and concerns require acknowledgement and response which is empathetic and positive.

India has initiated the Reproductive Child Health Care (RCH) Phase II Programme as scheduled from 1st April 2005. This Programme implies a “paradigm shift” looking upfront at performance and upholding the desired standards of quality and client sensitivity. This Programme evolves a shared vision and a common Programme encompassing the

entire Family Welfare sector, lending a strong focus on results, especially improving the use of RCH services by the poorest and the underserved populations and thereby contributing to the national and international goals. Among the various components envisaged in RCH, Adolescent Health plays a major role in determining the monitoring indices.

A large number of adolescents are out of school, get married early, work in vulnerable situations, are sexually active, and are exposed to peer pressure. These factors have serious social, economic and public health implications. Adolescents are not a homogenous group. Their situation varies by age, sex, marital status, class, religion and cultural context.

It is important to influence the health-seeking behaviour of adolescents as their situation will be central in determining India's health, mortality and morbidity; and the population growth scenario. Some of the public health challenges for adolescents include pregnancy, excess risk of maternal and infant mortality, sexually transmitted infections and reproductive tract infections in adolescence, and the rapidly rising incidence of Human Immuno Deficiency Virus (HIV) infection in this age group. In the context of the RCH Programme goals, with special reference to reduction in IMR, MMR and TFR, addressing adolescents in the Programme framework will yield dividends in terms of delaying the

age at marriage, reducing the incidence of teenage pregnancy, the prevention and management of obstetric complications including access to early and safe abortion services and the reduction of unsafe sexual behaviour.

Adolescents are in the early stages of developing attitudes , communication patterns and behaviour related to sex relationships. In this situation it is absolutely essential for adolescents to be well informed about their bodies and their reproductive functions because adolescence is a key time to learn, to develop the right values and attitudes and to make decisions about health related activities that can influence future well being of not only the individuals but the entire nation.

Therefore, it would be useful to study the existing level of knowledge and attitude towards reproductive and sexual health among higher secondary students who are a part of the adolescents so that we can determine what needs to be done at home and school to improve the situation.

Unfortunately, the studies about reproductive health programs that exist are predominantly in the developed countries. The majority of reproductive health programs in developing countries have not been

evaluated or even described extensively.Therefore, research about the knowledge, attitude and self-efficacy related with reproduction, contraception, STI/HIV and sexual risk behavior among higher secondary students in India is scant

Some research and theoretical considerations suggest that **self-efficacy** plays an important role in whether a person practices protective sexual behavior. Self- efficacy, a component of social learning theory[4] refers to a person's beliefs concerning how capable he or she is of performing specific actions that result in specific outcomes. In particular, self-efficacy focuses on individuals' convictions that they can exercise control over their motivations, behaviors, and social environments. Reports in the literature provide support for the utility of self-efficacy as a predictor of intending to use condom and other contraceptives or refusing intercourse unless contraception is used [5].

STUDY AREA

Tiruvallur District

Tiruvallur District was selected randomly for doing this study. Tiruvallur District, bifurcated from the erstwhile Chengalpattu District

(on 1st January 1997), is located in the Northeast part of Tamilnadu. The district spreads over an area of about 3422 square kilometers. The population of the district is 27,38,866 with 51% males and 49% females as per the census 2001. The district has a mixture of urban and rural characteristics.

Vital Statistics of Tiruvallur District

Birth Rate	:	17.3
Death Rate	:	5.4
Infant Mortality Rate	:	18.9
Maternal Mortality Rate	:	0.5
Life Expectation (average)	:	66.4 years
Average Marriage Age- Male	:	24 years
Average Marriage Age	:	19 years

The languages spoken in the district are Tamil, Telugu, Hindi, Malayalam and Urdu. The district is dominated by Hindus while people belonging to other religions are also present.

2. OBJECTIVES OF THE STUDY

1. To determine the level of knowledge about reproduction, contraception, and STI/HIV of higher secondary students enrolled in 11th and 12th standards of selected schools in Tiruvallur District.

2. To determine the attitude and self efficacy about reproduction, contraception, and STI/HIV of higher secondary students enrolled in 11th and 12th standards of selected schools in Tiruvallur District.

3. To predict practices of protective sexual behaviour among higher secondary students enrolled in 11th and 12th standards of selected schools in Tiruvallur District and their capability to perform certain actions.

3. STATEMENT OF PROBLEM

The use of health services by adolescents is limited. Poor knowledge and a lack of awareness are the main underlying factors. Pregnancy is associated with significantly higher obstetric risks in adolescent girls and yet they are no more likely than older women to obtain antenatal care or experienced institutional or skilled attendance at delivery. Anaemia during adolescence can get worse during pregnancy. Thus, ill health during adolescence has profound implications for maternal, perinatal, neonatal and infant mortality. Service provisions for adolescents are influenced by many factors. For example, at the level of the health system, a lack for adequate privacy and confidentiality and the judgmental attitudes of service providers, who often lack counseling skills, are barriers that limit access to services.

The challenges facing young adults growing up in the 21st century, especially in the developing countries are greater than ever. Millions of young adults are affected by problems of poor nutrition, infectious diseases, early pregnancies, inadequate access to clean water and sanitation, violence, substance abuse, and the increasing threat and burden of living with Sexually Transmitted Infections (STI) and Human

Immunodeficiency Virus (HIV)[6,7,8,9]. Young people need to be equipped with the correct knowledge, attitudes, values and skills that will help them face these challenges and assist them in making healthy life-style choices as they grow. Skill based health education programs delivered through schools is one way through which young people can be helped to face these challenges and make such choices.

Despite the concerns voiced by the United Nations, 180 members countries, international organizations, and individual adolescents everywhere, the reproductive health concerns of young people are too often neglected. Herbert Friedman, chief of World Health Organization (WHO) Adolescents Health Program Division stated, “although young people can make great use of knowledge and skills, they are often denied access to information and services for their health”. This stems in part from societal beliefs and attitudes about adolescent sexual behavior and contraception and from subsequent policies and regulations preventing adolescents from receiving services.

The repercussions from this neglect will be exacerbated as the number of adolescents growth rate increases during the next decade. In 2010, demographers predicted that there would be more 10 to 19 years old on the planet than ever before. The state of their health and education

will determine greatly the strength and fate of the nations in which they live[10]. The World Health Organization (WHO) explains, “As their individual development and social contribution will shape the future of the world, investment in adolescent’s health, nutrition and education is the foundation for national development” [11,12].

Most young people (10-24) initiate sexual behaviour during this age and have many misconceptions and myths related to sexual and reproductive health. There are numerous myths attached to sexuality and reproductive health (concept of "manhood", STIs and virginity, semen myths etc.) that are at the root of High Risk Sexual behaviour in this particular age group[13]. In addition many mental health and social problems (anxiety, depression, poor body image, stigma, suicides) may result from myths about masturbation, body image, erectile dysfunction, illegitimate pregnancy and sexual problems (eg. Premature Ejaculation). In addition, most adolescents lack relevant information and skills to practice safe sex[14]. This situation has its impact not only on adolescent/young individual but also on their families and the society. Adolescents are “exposed” to sexual imagery and messages in today's media but lack accurate and “useful” information concerning sexuality and reproductive health.

IMPLICATIONS OF EARLY SEXUAL INVOLVEMENT IN ADOLESCENCE[15,16]

- Adolescents who start having sex early are more likely to have sex with : high risk partners or multiple partners.
- They are less likely to use condoms.
- Contraceptive usage is likely to be low.

CONSEQUENCES OF UNSAFE SEXUAL BEHAVIOUR AMONG ADOLESCENTS

- Early pregnancy and Parenthood (early marriage and sometimes 'out of wedlock')
- Higher percentage of low birth weight (LBW) babies and increased infant morbidity and mortality
- Abortions and its related complications
- RTI/STI including HIV/AIDS

CONSEQUENCES THAT ARE MORE IN ADOLESCENTS EVEN IF IT HAS BEEN 'SAFE SEX'

- Emotional impact – guilt, stress, anxiety, suicide
- Social impact - Stigma (especially if unmarried)
- Economic impact - hindrance to academic and career progression

Emotional, social and economic impact may be more in case of adolescents (even if it is safe sex) because they are not mature enough to handle these consequences.

NEGATIVE IMPACT DUE TO LACK OF AWARENESS AND SKILLS RELATED TO SEXUALITY AND HIV[17,18,19]:

School going Adolescents can face potentially serious physical, social and economic consequences from unprotected sexual relations such as: unintended and too early pregnancy and childbirth, 'unsafe abortions' and STIs including HIV. These events can also cut short educational and job opportunities; and negatively affect social and cultural development – especially of adolescent girls. For boys too, early fatherhood can disrupt educational plans and increase economic responsibilities.

Adolescent Sexuality, if not dealt with properly, has serious repercussions. The lack of accurate information regarding sexual anatomy and physiology may lead to sexual ill-health. In many cases, adolescents are ignorant about sexuality largely because they have a negative emotional attitude toward sex organs and matters related to sexuality. It is not uncommon for adolescents to perceive their sexual organs as dirty and to refrain even from looking at them. Such negativism is particularly common among females, but males, too, may have negative feeling about sex organs. The innumerable myths attached to the organs and their functioning are usually picked up early in childhood and adolescence from peers or available, unscientific literature and may lead to irreparable harm later in life.

Lack of sexual health education contributes to the health and pyscho-social problems of the adolescents. They are likely to be curious yet ill-informed, bold yet vulnerable and have numerous myths related to sexual anatomy and functioning. Many adolescents adopt high risk behaviour due to the numerous myths and lack of skills – especially ability to negotiate and to deal with peer pressure effectively.

Therefore, it would be useful to study the existing level of knowledge ,awareness and their attitude towards reproductive and sexual health among higher secondary students so that one can determine what needs to be done at school to improve the situation.

Many adolescents in higher secondary schools in Tamil Nadu, who become sexually active, do so without accurate information about reproductive and sexual health. This lack of information can put them at risk of unplanned pregnancy or sexually transmitted infections (STI/HIV).This study will measure the higher secondary students' knowledge, attitude and self-efficacy related with reproduction, contraception, STI/HIV and sexual risk behavior among higher secondary students in Poonamallee Block, Tiruvallur District , Tamil Nadu, India.

4. JUSTIFICATION OF THE STUDY

Teenage pregnancy has always been seen as a problem of the western world but the hard reality is that it exists as much in our society as it does in the west. Pre-marital sex is not just common to cultures abroad but also to our culture. Pre-marital sex and teenage pregnancy mostly goes unreported due to the social stigma attached to the unwed girl or her family. Teenage pregnancy is more a problem in rural societies of India than in urban areas. Urban India is changing by the day. With live-in relationships, pre-marital sex and free sex on the rampant, it's a completely new world but rural India is unfortunately not moving with the same pace. Pregnancy in very young women is generally considered to be a very high risk event, because teenage girls are physically and psychologically immature for reproduction. In addition, there are some extrinsic factors such as inadequate prenatal care, illiteracy, poor socio-economic conditions which affect the outcome of pregnancy in teenage girls. While there is a growing recognition of the need for action to promote adolescent reproductive health, work done in this field is often piecemeal. With problems of pre-marital sex and pregnancy, come other issues like HIV and AIDS. Concerned authorities need to create a larger awareness among these poor rural folks about the use of contraception

and find a solution quickly to avert more future problems. This study exactly addresses this problem.

The data released by the International Population Sciences which states that 17% of all the births in the country occurs to women aged between 15 and 19 years in the year 1992-93. Majority of the teenage pregnancies occurred in the age group 18-19 years as compared to the other studies where 65% of the teenage mothers were 19 year olds. According to the Rapid Household Survey-Reproductive and Child Health 1998-99, 37% of the girls are married before attaining 18 years of age. Early marriages, i.e. between 15-19 years, lead to large families and also increase the mortality and morbidity of both the mother and the child[20].

The controversy over reproductive health programs in Tamil Nadu's schools has had a long process with resistance to produce solutions. Although Tamil Nadu has made progress in recognizing, at least in theory, the importance of reproductive and sex education as a subject in the formal school education system , it is clear that little effective action has been taken so far to implement these stipulations.

One of the goals of sexuality education programs is to increase school students' knowledge about reproduction, contraception, and the danger of sexually transmitted infections[21,22,23]. It would thus seem

reasonable to assess the level of knowledge among higher secondary students in Tamil Nadu and then to design programs based on the findings, filling gaps, and spending less time on what teens already know. The level of knowledge found in this study could show the level of risk that these higher secondary students are exposed to early pregnancies and sexually transmitted infections. Rates of sexually transmitted infections and unintended pregnancies have been increasing among school students in Tamil Nadu. The real dimension of sexually transmitted infections in Tamil Nadu students is not very well known because most of the cases are not reported

The significance of this study in measuring higher secondary students' knowledge, attitude and self-efficacy is evident. Level of knowledge related with reproduction, contraception and risks for STI/HIV as well as attitude and self-efficacy can show us the necessity of establishing reproductive health programs in Tamil Nadu schools. Through studies such as this, we are developing a full understanding of the characteristics of why higher secondary students are at risk for early pregnancy, and STI/HIV.

5. REVIEW OF RELATED LITERATURE

Sexuality education focuses on the individual: specifically, individual sexual activity, biology, relationships, sexual orientation and sexual behavior, STI, gender role, attitudes and values[24].

The Sex and Information Council of the United States (SIECUS) defines sexuality education as a "lifelong process of acquiring information and forming attitudes, beliefs and values about identity, relationship and intimacy" [25]. With the ultimate goal of promoting sexual health, sexuality education generally aims to provide the following content: Sexual development, reproductive health, interpersonal relationships, affection, intimacy, body image, and gender roles, to help young adults acquire skills to make decisions and take care of their sexual health.

The components of School-Based Reproductive Health Programs from published and unpublished literature and also from the experience of programmers through the classroom have shown that students can not only receive sexuality Reproductive Health (RH) information but also explore their own values and attitudes and acquire personal skills needed to maintain healthy behavior.

An issue confronted worldwide is whether it is appropriate to address reproductive health in schools. The content and goals of school-based reproductive health programs are often a source of great controversy. One major concern frequently voiced by parents, teachers, and school officials is that sex education and the availability of family planning services will increase young people's interest and involvement in sexual behavior. Research overwhelmingly points to the contrary[26,27].

A study commissioned by the World Health Organization (WHO) analyzed 1,000 reports on Reproductive Health (RH) programs primarily in developed countries and found no evidence that the provision of sex education, including the provision of contraceptives services, encourages the initiation of sexual activity. In some cases, sex and HIV/AIDS education delayed the initiation of sexual intercourse, decreased sexual activity, and increased the adoption of safer sexual practices among sexually active young people[28,29,30].

Young people need two types of messages in sex education programs, the World Health Organization, report from 1998 says, messages for those who have not begun sexual activity and messages for those who are already sexually active. Also, because some young people begin having sex as early as age 12, the report recommended that formal sex education programs begin well before this age. The goal of many sex education programs is to reduce the incidence of unplanned pregnancies,

and try to find ways to reduce the incidence of unprotected intercourse as well.

While some studies have found benefits of sex education programs, others have shown negligible results. A study in St. Kitts-Nevis, in the eastern Caribbean, compared students who took sex education courses and those who did not. The course, which was held twice weekly for 26 weeks, included information on reproduction and contraception, emotional development and sexuality. Students completed a questionnaire on sexual activity and contraceptive use before they took the course, then at the end of the course. Approximately one-third of sexually active students said that they used contraception before they began the sex education course, and the percentage changed was very negligible[31].

A retrospective study of 8,450 young adults women in the United States, ages 15 to 24, examined the relationship between sex education and use of contraception at first intercourse[32]. Women who received formal instructions on contraceptive use before their first sexual intercourse were more likely to use a contraceptive method of birth control. Women were less likely to use a method of contraception if they received information on contraception the same year they began sexual activity. A survey conducted among 1,800 15 to 19 years-old males in United States, found that among those who had received formal education

about AIDS and family planning, there was a decrease in number of sexual partners and increase in consistent use of condoms[33,34].

Lack of information may be one reason that adolescents' use of family planning methods is generally low. In South America, for example, only 43 percent of young married women, ages 15 to 19, are using contraception, according to data complied by the Population Reference Bureau (PRB). Among unmarried sexually active women, 29 percent use contraception. In Western Africa, five percent of married teenagers use a family planning method, compared with 34 percent of sexually active unmarried teenagers. In Southeast Asia, 36 percent of married young adults use contraception, compared with 28 percent of unmarried adolescents[35,36,37].

Misinformation and misunderstandings about conception, family planning and STI risks abound among young adults. In Jamaica, research conducted by University of the West Indies and Family Health International (FHI) Women's Studies project found that one group of adolescent had little information about reproductive health issues. The study surveyed about 500 students, ages 11 to 14, as they began an inschool family life education program designed to delay first pregnancy.

Students in this group were considered to be at high-risk for early sexual activity[38,39].

Another example of sex education programs that encourages behavior change is the Center for Youth in Colombia. Established in 1990 by Profamilia, the center offers information and education to adolescents, education for parents and teachers, and reproductive heath services. Profamilia which operates in 20 cities in Colombia decided to expand the content of its sex education programs, which traditionally had focused on the biological aspects of reproduction, to include information on pregnancy and STD prevention, plus activities designed to promote self-esteem, communication, and decision-making. One of the services Profamilia has begun to offer is a "psychological orientation," or a counseling session in which young people can discuss fears or concerns about sexuality and health[40,41,42.].

In 1996 Fe & Alegria, an International Non-Governmental Organization (NGO), began implementation of a pilot project using WHO Life Skills training materials, adapted to a Colombian context. The pilot covered six schools in three regions (1,260 students, aged 10-15, 500 parents and 45 teachers). The project included teacher training programmes and workshops, extra curricular activities and work with parents. Although full evaluation of the project has not yet been

completed, teachers, parents and pupils have indicated initial positive outcomes, including; positive changes in behavior, decreased levels of aggression, greater ability to speak openly and cope with emotions, high degree of acceptance of life skills methods[43].

One study that has been completed and published is "Sexual Behavior of Colombian High School Students"[44]. This study was done in the city of Manizales, Colombia; the study presented the results of a survey on the sexual behavior of Colombian high school students indicating that prostitutes are playing a decreasing role in the sexual lives of Colombian males as a result of a trend toward premarital coital permissiveness among Colombian females. This study's findings as well as those obtained by Alzate [45,46,47] among Colombian university students, indicate that Colombian females start sexual activities much later and carry them out in fewer numbers or with fewer frequencies than do their male counterparts. This is in accordance with the double standard[48] that has prevailed in Colombia, and contrast with the more egalitarian sexual behaviors of American adolescents [49]. On the other hand, the fact that a boyfriend was the partner at most first coital experiences indicates that the standard of sexual behavior of the female subjects who had this experience was permissiveness with affection[48] .

The prevalence of the sexual risk behaviors among young adults is still not very well known. The few studies that have been conducted so far indicate a need for broad-based educational efforts. Such effort should include education in the school, increased availability of resources that aid in the prevention of early pregnancies and STI/HIV, condom use, patients' counseling, and mass media information campaigns. Given that attitudes and self-efficacy are related to risk behavior, an educational approach that involves more than providing information is needed. Attitude change requires an exploration of personal values, while increasing self-efficacy requires role - modeling and successful experience with the desired behavior[50] .

Early efforts to measure knowledge, attitude and self-efficacy for youth are not informed by theoretical models or empirical data to determine the antecedents of risk behavior in school students in India. In order to further develop educational programs that have the potential for risk education, it is essential that research be conducted to provide a better understanding of the psychosocial variables that lead to risk taking behavior. The result of this study will help to give some directions for intervention; however much more work will be needed, including the expansion of predictive variables, longitudinal studies, and testing of interventions to influence change in predictor variables.

In summary, during the last decades researchers have been working on several sexual education programs with school students. Most of those studies have been conducted in the United States and few studies have been done in Latin America high schools. Researchers and program developers are trying to make great progress in their efforts to reduce adolescent unprotected sex and prevent teen pregnancy. Research studies are now more likely to employ experimental designs with random assignment, to have large sample sizes with adequate statistical power, to measure actual sexual and contraceptive behaviors, to measure longer-term effects, to employ proper statistical methods, and to report results in an unbiased manner. As a result of these research studies, large advances could occur if there is an understanding of teen pregnancies and its consequences, the effects of improving adolescent knowledge, increasing access to contraception, and improving parent/child communication, and the characteristics of effective programs.

6. METHODOLOGY

The study on the level of knowledge, attitude, and self-efficacy related with reproduction, contraception, STI/HIV and sexual risk behavior among higher secondary students in Tiruvallur District, Tamil Nadu is a cross sectional community based study.

STUDY PERIOD

The study period extended from April 2007 to October 2007. The data collection was done during the months of June and July 2007.

SAMPLING TECHNIQUE

The study used a multistage randomized cluster sampling, involving students from the eleventh and twelfth standards in selected schools of Tiruvallur District in Tamilnadu.

The present study was carried out among students studying in 11th and 12th standards of schools of Poonamallee block, Tiruvallur district, Tamil Nadu, selected by a two stage random sampling procedure. In the first stage four higher secondary schools were selected. In the second

stage two sections from 11 th and 12 th standards were selected randomly from each school. All the students in these sections were included in this study.

Four hundred and sixty four students were included in this cross sectional, community based study. The study was restricted to only higher secondary students. The schools having teaching facility up to 12th standard were included.

POPULATION AND SAMPLE

The population was 6400 higher secondary students from all higher secondary schools in Poonamallee block, Tiruvallur district, Tamil Nadu.

Sample Size

The sample size was calculated using the formula,

$n = (z^2 pq/d^2)$ *(Where z = 1.96 at 95% confidence);*

p = population proportion;

q = 1-p;

d = allowable error.

For this study, we presumed maximum variability, hence p = 0.5; q = 0.5; d = as 10% of p.

Sample size thus arrived was 383 informants.

According to the records maintained at District Education Office, Tiruvallur District has 16 Government Higher Secondary schools with a total of 6400 eleventh and twelfth standard students.

The study featured a sample size of 560 students enrolled in the selected sections of eleventh and twelfth standards.

Total no. of Higher Secondary students in Tiruvallur	**:**	**6400**
Students in the randomly selected 8 sections of 4 schools	**:**	**560**
Students who returned with parental consent	**:**	**473**
No. of questionnaires with incomplete answers	**:**	**9**
No. of completed questionnaires taken up for analysis	**:**	**464**

RESEARCH INSTRUMENT

This study made use of questionnaires as method of data collection. A questionnaire was constructed for this study to assess the demographic characteristics (sex, class, age), knowledge, attitude and self-efficacy for the three domains of reproduction, contraception, and STI/HIV. The questionnaire was adapted from similar questionnaires employed in other investigations and adapted to local social and cultural norms, values and religious beliefs. Twenty items from a wide range of sexuality related topics were selected to measure student's knowledge. Six items measured

knowledge about reproductive physiology, seven items measured contraceptive knowledge, and seven items assessed knowledge of STI/HIV.

The study measured attitudes in 5 Likert-type items taken from the National Adolescents Students Health Survey[51] and adapted to local social cultural norms.

The self-efficacy scales were adapted from an instrument developed by Longoria[52,53]. Each of the scales consisted of 5 Likert-type items that asked the respondent to rate his/her confidence that he/she can implement particular STI/HIV preventive behavior.

PRE-TESTING OF THE QUESTIONNAIRE

The questionnaire was pre-tested among 50 higher secondary students in a school of the same block. Minor changes were done in the questionnaire after pre-testing. The results of the pre-testing were not included in the final analysis.

DATA COLLECTION

The Headmaster/Headmistress of each school was contacted by the investigator to determine whether his or her school was willing to participate in the study. After the Headmaster/Headmistress of each school agreed to participate in the study, active parental consent was acquired for study participation. 560 students were provided parental consent forms to participate in the study. Four hundred and seventy three (473) students returned with parental consent.

The study questionnaire was administered by the investigator and she was helped by six medical students undertaking their housemanship. The surveys were administered in a separate classroom designated by the school authorities and enough privacy was ensured to the students, the students completed the anonymous questionnaire. The questionnaire took approximately 30 minutes to complete. To increase honest disclosure of information, student's responses to the questionnaire were anonymous and protected from disclosure by allowing each student to seal the completed questionnaire in an envelope.

ETHICAL CONSIDERATIONS

Permission to conduct the study was obtained from appropriate authorities. Informed and written consent from the students and their parents were obtained before administration of the questionnaire. A letter of introduction was given to the students. This letter explained the purpose and importance of the study to the field of practice, and encouraged them to participate in the completion of the questionnaires. Confidentiality was guaranteed. Name of the participants and their institutions are not mentioned in the dissertation to ensure anonymity. Care was taken to ensure the rights of the people taking part in the study were protected.

7. RESULTS AND DISCUSSION

This study evaluated the level of knowledge about reproduction, contraception, and STI/HIV and attitude, self-efficacy and sexual risk behaviors among eleventh and twelfth standard students in Tiruvallur District, Tamil Nadu, India..

Before analysis, nine cases had to be dropped because of missing answers to some of questions. Participants did not answer some questions concerning class, religion and sexual intercourse. There were no significant differences between dropped and retained cases in the rest of the items. EPIINFO, SPSS free trial version 14 and Microsoft Excel softwares were used to analyse the data.

The survey provided valuable information about the knowledge, attitude and self-efficacy of higher secondary students towards reproduction, contraception, STI/HIV and sexual risk behaviors.

The sample respondents appear to reflect the demographic characteristics of higher secondary students. Generally, the majority of the respondents were male. The average ages of the respondents were between 15-17 years . The family composition of the students revealed that the majority (83.8) of the respondents live with both their parents and 13.8% live with single parent. The religion reflects the characteristics of Indian population, 83.8% of the participants reported to be Hindus.

The survey asked a variety of questions intended to measure level of knowledge on reproduction, contraception and STI/HIV. Overall, on the total 20 items, these higher secondary school students had an average correct score of 40% . On the scale measuring knowledge about reproductive physiology, the average percentage correct was 38.6% while on contraceptive knowledge, the average was 33.7% correct. The higher secondary students did better on the scale measuring knowledge about STI/HIV with an average score of 46.7%correct.

The data suggests that a large percentage of these higher secondary students have serious misinformation or no information at all about some matters they should know by their ages . Study reveals that the higher secondary students are receiving less than adequate health and sexual education programs in their school curriculum.

There are many basic physiological facts of which these higher secondary students are apparently ignorant, these include not knowing what it means if a teenage girl starts menstruating after 14 years of age, being misinformed about the physiology of menstruation and urination.

Almost 82% knew that pregnancy occurs when sperm fertilizes an ovum, but only 34.5% knew that a girl could get pregnant the first time she has sex. When they were asked about the knowledge that when sex is infrequent, pregnancy could still occur, 31% did not know the correct answer to this question. These findings suggest that there is a lot of work

that need to be done to increase students' knowledge in reproduction and contraception. As in the physiology items, there are some results here that suggest dangerous lack of knowledge. Over 47.2% did not know that urinating after sex does not prevent pregnancy and 59% did not know that douching is not a method of birth control.

These higher secondary students did better on the items pertaining to STI/HIV. However, there are results that suggest great risk for early pregnancies and STIs. Nearly a third 28.2% did not know that teenage girls could get STIs from boys who have had sex only a few times. Only about 41.2% knew that STIs do not go away on their own, and 25.9% knew that it is possible to have more than one STIs at the same time.

The survey also asked a variety of questions intended to measure attitudes that predict practices of protective sexual behavior among these higher secondary students and their capabilities to perform specific actions that result in attitudes on self-control over their motivations through their sexual behavior. The students were asked how they feel about people their age having sex with several people, 30.6% disagreed to have sex with several different people.

The self-efficacy questions intended to measure protective sexual behavior. The data included items about refusing sexual intercourse, measuring ability to use or not condom. Inspection of these scales suggest that the typical respondents believed that they could use condoms, 70% of

the respondents reported confidence in their ability to use condoms. About three percent of the participants have reported to have had sexual intercourse This finding indicates that some of the higher secondary students are engaging in sexual intercourse and the majority of them have positive attitudes about condom use. In spite of this, there is an important percentage of students, 29.8% who would not refuse to have sexual intercourse if they do not have condoms. These data suggest that these students are at risk for STI and pregnancies, and could benefit from interventions to enhance their self-efficacy for protective sexual behaviors.

7.1 SUMMARY OF DEMOGRAPHIC DISTRIBUTION OF RESPONDENTS

7.1.1 SEX

Of all respondents, 55.82 percent were male and 44.18 percent were female

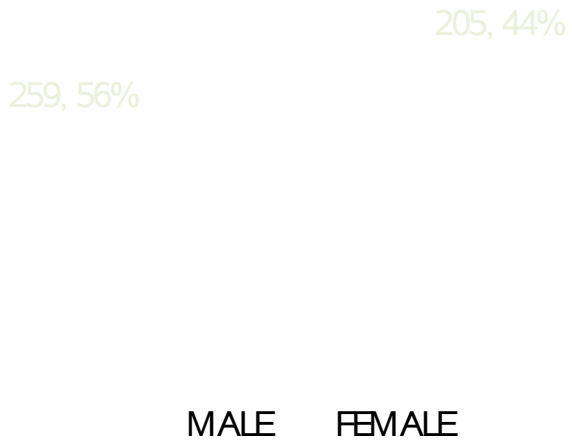

FIG.1. Sex Distribution

7.1.2 AGE

The largest age category responding to the survey was the group with students between the ages 15-16 : 88.8 percent. The age group between 16-17 was the second largest responding group, with 11.2 percent

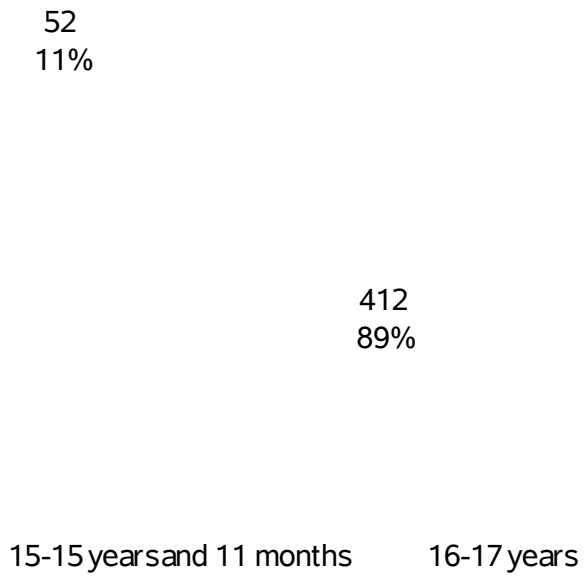

FIG.2. Age Distribution

7.1.3 RELIGION

The overwhelming majority of the respondents were Hindus(83.8 percent), while the remaining 16.2 percent were of “other religions”.

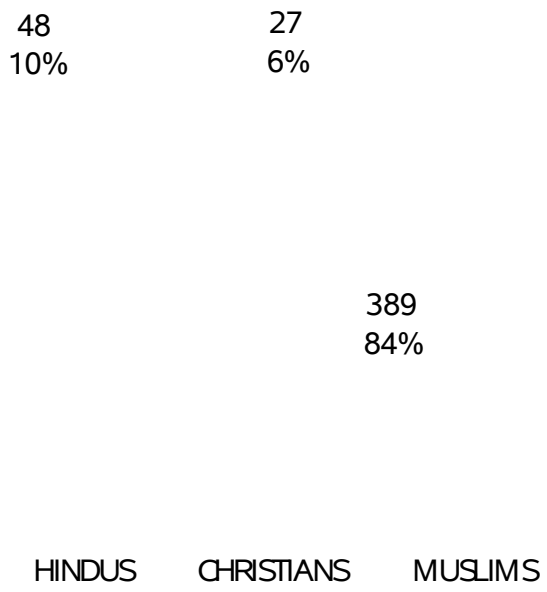

FIG.3. Religion Distribution

7.1.4 FAMILY COMPOSITION

Out of all student respondents, 13.8 percent were living with a single parent only, while 83.8 percent were living with both parents. Only about 2.4 percent of the respondents were living with other relatives

Table 1. Family Composition

Family Composition	Frequency	Percent
Live with both parents	389	83.8
Live with one parent	64	13.8
Live with other relatives	11	2.4

7.2 STUDENTS' LEVEL OF KNOWLEDGE ON REPRODUCTION

The overwhelming majority of the respondents, 73.9 percent, responded with the correct answer when they were asked whether or not the fluid that contains the male sperm is called semen. For the question, "the male hormone is called testosterone", almost 38 percent of the respondents selected the incorrect answer, while 34.7 percent of the respondents selected the correct answer. The question whether or not the fertilization of the egg occurs in the uterus, almost half of the respondents, 49.1 percent, chose the correct answer, while 45.9 percent of the respondents chose the incorrect answer.

The majority of the respondents, 50.6 percent did not have an opinion when they were asked whether or not there is usually a problem if a teenage girl does not get her period by the time she is 14. Only, 18.1 percent of the respondents selected the correct answer. 51.9 percent of the respondents chose the incorrect answer when they were asked whether or not urination and menstruation occur through the same opening in the female organ. When the respondents were asked whether or not it is dangerous to have sexual intercourse during a girls' period, 44.4 percent of the respondents did not have an opinion on this matter.

Table 2. Students' Level of Knowledge On Reproduction

QUESTION	FREQUENCY	PERCENT	ANSWER
The fluid that contains the male sperm is called semen			True
True	343	73.9	
False	78	16.8	
Don't know	43	9.3	
TOTAL	**464**	**100.0**	
The male hormone is called testosterone			True
True	161	34.7	
False	175	37.7	
Don't know	128	27.6	
TOTAL	**464**	**100.0**	
Fertilization of the egg occurs in the uterus			False
True	213	45.9	
False	228	49.1	
Don't know	23	5.0	
TOTAL	**464**	**100.0**	
There is usually a problem if a teenage girl does not get her period by the time she is 14			False
True	145	31.3	
False	84	18.1	
Don't know	235	50.6	
TOTAL	**464**	**100.0**	
Urination and menstruation occur through the same opening in the female organ			False
True	241	51.9	
False	176	38.0	
Don't know	47	10.1	
TOTAL	**464**	**100.0**	
It is dangerous to have sexual intercourse during a girls' period			False
True	176	38.0	
False	82	17.6	
Don't know	206	44.4	
TOTAL	**464**	**100.0**	

7.3 STUDENT'S LEVEL OF KNOWLEDGE ON CONTRACEPTION

The results for the questions related to contraception knowledge are found in Table 3 . The question, "pregnancy happens when a sperm fertilizes an ovum (egg)", was answered correctly by the overwhelming majority of the respondents, 82.1 percent. When the respondents were asked whether or not girls can not get pregnant the first time they have sex, the majority of the respondents, 50.2 chose the incorrect answer, while 34.5 percent of the respondents selected the correct answer.

The results for the question, "a girl who has sex only once in a while, needs a birth control", were evenly distributed among the group categories. 42.5 percent of the respondents chose the incorrect answer, while 26.5 percent of the respondents selected the correct answer. The remaining 31.0 percent of the respondents did not have an opinion on this matter. When the respondents were asked whether or not urinating after sex sometimes prevents pregnancy, 47.2 percent of the respondents selected the incorrect answer, while 33.4 percent of the respondents chose the correct answer. Almost 60 percent of the respondents chose the incorrect answer when they were asked whether or not douching is a method of birth control.

Table 3. Students' Level of Knowledge On Contraception:

QUESTION	FREQUENCY	PERCENT	ANSWER
Pregnancy happens when a sperm fertilizes an ovum (egg)			True
True	381	82.1	
False	60	12.9	
Don't know	23	5.0	
TOTAL	**464**	**100.0**	
Girls can not get pregnant the first time they have sex			False
True	233	50.2	
False	160	34.5	
Don't know	71	15.3	
TOTAL	**464**	**100.0**	
If a girl has sex only once in a while, she really does not need birth control			False
True	197	42.5	
False	123	26.5	
Don't know	144	31.0	
TOTAL	**464**	**100.0**	
Urinating after sex sometimes prevents pregnancy			False
True	219	47.2	
False	155	33.4	
Don't know	90	19.4	
TOTAL	**464**	**100.0**	
Douching is a method of birth control			False
True	274	59.1	
False	114	24.6	
Don't know	76	16.3	
TOTAL	**464**	**100.0**	
Sperm can live a few days in the women's body			True
True	85	18.4	
False	106	22.8	
Don't know	273	58.8	
TOTAL	**464**	**100.0**	
Letting semen drip out of the female organ after sex prevents pregnancy			False
True	161	34.7	
False	90	19.4	
Don't know	213	45.9	
TOTAL	**464**	**100.0**	

Fifty-nine of the respondents did not have an opinion when they were asked if the sperm could live a few days in the women's body. 22.8 percent of the respondents selected the incorrect answer. The question, "letting semen drip-out of the female organ after sex prevents pregnancy", was answered incorrectly by 34.7 percent of the respondents.

7.4 STUDENTS' LEVEL OF KNOWLEDGE ON STI/HIV

Table 4 summarizes the results regarding students' level of STI/HIV knowledge. The question, "a highly reliable method of avoiding pregnancy and STI/HIV is to use a condom and spermicidal", was answered by 48.1 percent of the respondents correctly, while 33.4 percent of the respondents selected the incorrect answer. The overwhelming 49.4 percent did not know that it is possible to have more than one STI at a time.

Forty-seven percent of the respondents stated that only people who look sick could spread the AIDS virus. Conversely, 52.2 percent chose the correct answer. The majority of students, 58.4 percent knew that a person cannot get AIDS by being bitten by a mosquito that has bitten someone else with AIDS.

Table 4. Students' Level of Knowledge On STI/HIV:

QUESTION	FREQUENCY	PERCENT	ANSWER
A highly reliable method of avoiding pregnancy and STI/HIV is to use a condom and spermicidal			
True	223	48.1	True
False	155	33.4	
Don't know	86	18.5	
TOTAL	**464**	**100.0**	
Teenage girls can not get HIV from teenage boys who have had sex only a few times			
True	131	28.2	False
False	233	50.2	
Don't know	100	21.6	
TOTAL	**464**	**100.0**	
STIs usually go away on their own			
True	207	44.6	False
False	191	41.2	
Don't know	66	14.2	
TOTAL	**464**	**100.0**	
It is possible to have more than one STI at a time			
True	120	25.9	True
False	115	24.7	
Don't know	229	49.4	
TOTAL	**464**	**100.0**	
Only people who look sick can spread the AIDS virus			
True	218	47.0	False
False	242	52.2	
Don't know	4	0.8	
TOTAL	**464**	**100.0**	
A person can get AIDS by touching or hugging someone with AIDS			
True	257	55.4	False
False	203	43.8	
Don't know	4	0.8	
TOTAL	**464**	**100.0**	
You can get AIDS by being bitten by a mosquito that has bitten someone with AIDS			
True	72	15.5	False
False	271	58.4	
Don't know	121	26.1	
TOTAL	**464**	**100.0**	

7.5 STUDENTS' ATTITUDE TOWARDS SEXUAL RISK BEHAVIOUR

Table 5. Students' Attitudes Towards Sexual Risk Behaviors

QUESTION	FREQUENCY	PERCENT
I believe it is OK for people my age to have sex with several different people		
Agree	197	42.5
Disagree	142	30.6
Strongly Disagree	125	26.9
TOTAL	**464**	**100.0**
I believe condoms should used if a person my age is sexual active		
Strongly Agree	131	28.2
Agree	242	52..2
Disagree	91	19.6
TOTAL	**464**	**100.0**
Having sexual intercourse makes a boy and girl popular		
Strongly Agree	49	10.6
Agree	154	33.2
Disagree	117	25.2
Strongly Disagree	144	31.0
TOTAL	**464**	**100.0**
Having sexual intercourse at my age is a "cool" thing for a girl and boy to do		
Agree	180	38.8
Disagree	261	56.3
Strongly Disagree	23	4.9
TOTAL	**464**	**100.0**
It is important to talk with your parents or counselors about your sexual doubts		
Strongly Agree	243	52.4
Agree	148	31.9
Disagree	73	15.7
TOTAL	**464**	**100.0**

The information in this section is displayed in Table 5. When the students were asked if it is ok for people of their age to have sex with several different people , a total of 30.6 percent disagreed. Surprisingly 42.5 percent agreed. The overwhelming total of 52.2 percent agreed that condom should be used if a person of their age is sexually active.

A total of 56.2 percent disagreed when they were asked whether or not having sexual intercourse makes a boy and a girl popular. The overwhelming majority of the respondents, 84.3 percent, agreed with the statement, "it is important to talk with their parents about their sexual doubts".

7.6 STUDENTS' SELF EFFICACY TOWARDS SEXUAL RISK BEHAVIOUR

Table 6 grouped the questions related to student's self-efficacy toward sexual risk behaviors. The statement, "I would refuse to have sexual intercourse without condom", asked the respondents to rate his/her confidence that he/she can implement preventive behavior. Over 70 percent of students agreed that they would have refuse sexual intercourse without condom. However, 29.8 percent disagreed with this statement. When the students were asked if they would insist on using condom even if their partner did not want to, a total of 69.8 percent students agreed to use condoms and 30.2 percent disagreed. Among them 3.4 percent

responded that they have engaged in sexual intercourse, whereas 96.6 percent answered "No" to this question.

Table 6. Students' Self-Efficacy Towards Sexual Risk Behaviors

QUESTION	FREQUENCY	PERCENT
I would refuse to have sexual intercourse without condom		
Strongly agree	257	55.4
Agree	69	14.8
Disagree	138	29.8
TOTAL	**464**	**100.0**
I would insist on using a condom even if my partner did not want to		
Strongly Agree	257	55.4
Agree	67	14.4
Disagree	140	30.2
TOTAL	**464**	**100.0**
Have you ever had sexual intercourse?		
Yes	16	3.4
No	448	96.6
TOTAL	**464**	**100.0**
Do you feel worried that you might get pregnant if you are a girl or that you might get a girl pregnant if you are a boy?		
Yes	39	8.4
No	425	91.6
TOTAL	**464**	**100.0**
If I did not have a condom, would you have sexual intercourse anyway?		
Yes	171	36.9
No	293	63.1
TOTAL	**464**	**100.0**

When the students were asked if they feel worried about getting pregnant if you are a girl or getting a girl pregnant if you are a boy, the overwhelming number of 91.6 percent of the participants did not feel worried about pregnancy, only 8.4 percent did.

A similar number of students, 63.1 percent, would refuse to have sexual intercourse without condoms. This question verified the intention of the students to use condoms if they engaged in sexual intercourse.

7.7 CORRELATION COEFFICIENT

There are a number of different methods of computing a correlation coefficient in SPSS program (Free Trial version 14). Which one is appropriate depends on the type of data represented by each variable. The most commonly used technique is the product-moment correlation coefficient, usually referred to as the Pearson's r. The Pearson's r is used when both variables to be correlated are expressed as continuous data such as ratio or interval data [54].

Since the majority of the questions for the instrument for this study were treated as being interval data, Pearson's r was the appropriate coefficient for determining relationships. For that reason, Pearson's r coefficient was used to describe the magnitude and direction of the relationship between variables. Pearson's r coefficient of 0.70 or higher describes very strong association, Pearson's r coefficient of 0.50 to 0.69 describes substantial association, Pearson's r coefficient of 0.30 to 0.49 describes moderate association, Pearson's r coefficient of 0.10 to 0.29 describes low association, and person's r coefficient of 0.01 to 0.9 describes negligible association[55].

7.7.1 RELIGION AND ATTITUDE TOWARDS THE USE OF CONDOMS

Apparently, no appreciable effect of religion on the sexual behavior of the students was found. When religion was compared with attitudes toward the use of condoms use, it appears that religion did not affect the sexual behavior of the students toward the use of condoms. Of the 83.8 percent students who reported to be Hindus, almost 80 percent reported a positive attitude towards the use of condoms.

Table 7. Cross-Tabulations Between Religion and Attitude Towards the Use of Condoms

Religion		Attitude: I believe condoms should be used if a person my age is sexual active			Grand Total count	Grand % of Total
		Strongly Agree	Agree	Disagree		
Hindu	% Q.4	27.7%	52.7%	17.9%		
	% Q.9.2	83.0%	85.3%	83.9%		
Total count		389				
% of Total Count		83.8%			464	100%
Others	Count	15	24	10		
	% Q.4	30.6%	49.0%	20.4%		
	% Q.9.2	17.0%	14.7%	16.1%		
Total count		75				
% of Total Count		16.2%				

7.7.2 SEX AND REPRODUCTIVE KNOWLEDGE

Apparently, the data suggest that women demonstrated more knowledge than men in reproductive health matters. From 49.1 percent (228 students) who answered the question correctly about fertilization of the egg occurs in the uterus, 51.9 % (80 students) were females. Also, from 38 percent of the students (176) who answered the correct question about urination and menstruation occur through the same opening in the female organ, 56.4 percent were female. It would suggest that females demonstrated more awareness of knowledge in reproduction health matters than their male counterparts.

Table. 8-A. Cross-Tabulations Between Sex and Reproductive Knowledge -1

Fertilization of the egg occurs in the uterus		Sex		Grand Total count	Grand % of Total
		Male	Female		
True	% Q.1 % Q.6.3	63.9% 52.6%	36.1% 37.7%	464	100%
Total count		213			
% of Total Count		45.9%			
False	% Q.1 % Q.6.3	48.1% 42.3%	51.9% 58.0%		
Total count		228			
% of Total Count		49.1%			
Don't know	% Q.1 % Q.6.3	60.0% 5.1%	40.0% 4.3%		
Total count		23			
% of Total Count		5.0%			

Table. 8-B . Cross-Tabulations Between Sex and Reproductive Knowledge-2

Urination and menstruation occur through the same opening in the female organ		Sex		Grand Total count	Grand % of Total
		Male	Female	464	100%
True	% Q.1 % Q.6.5	58.9% 62.3%	41.1% 55.1%		
Total count		241			
% of Total Count		51.9%			
False	% Q.1 % Q.6.5	43.6% 34.3%	56.4% 42.8%		
Total count		176			
% of Total Count		38.0%			
Don't know	% Q.1 % Q.6.5	62.5% 2.9%	37.5% 2.2%		
Total count		47			
% of Total Count		10.1%			

7.7.3 REPRODUCTIVE KNOWLEDGE AND ATTITUDE TOWARDS THE USE OF CONDOMS

Pearson's r correlation between the variables- reproductive knowledge and attitude towards the use of condoms had substantial association. Pearson's r correlations of 0.55 and 0.59 suggest that students who answered correctly the questions about reproductive knowledge are more likely to use condom than those students who answered incorrectly. Of the 73.9 percent of the students (343) who answered correctly the question about the fluid that contains the male sperm is called semen, a total of 81.4 percent agreed to use condoms, these data suggest that students who are more knowledgeable in reproduction are more likely to use condoms when they engage in sexual intercourse. Of the 49.1 percent (228 students) who answered correctly the question about fertilization of the egg does not occur in the uterus, a total of 84.5 percent agreed to use condoms. These data also suggest that students with more awareness and knowledge about reproduction are more likely to use condoms.

Table 9. Correlation of Reproductive Knowledge and Attitude Towards the use of Condoms

The fluid that contains the male sperm is called semen		Attitude: I believe condoms should be used if a person my age is sexually active			Grand Total count	Grand % of Total
		Strongly Agree	Agree	Disagree		
True	% Q.6.1 % Q.9.2	33.6 88.6	47.8 68.1	18.5 69.4	464	100%
Total count		343				
% of Total Count		73.9				
False	% Q.6.1 % Q.9.2	18.5 11.4	59.3 19.6	22.2 19.4		
Total count		78				
% of Total Count		16.8				
Don't know	% Q.6.1 % Q.9.2		74.1 12.3	25.9 11.3		
Total count		43				
% of Total Count		9.3				

Pearson's r Correlation = 0.55 Substantial association	Q.6.1. The fluid that contains the male sperm is called semen	Q.9.2.Attitude: I believe condoms should be used if a person my age is sexually active
Q.6.1. The fluid that contains the male sperm is called semen Pearson's r Correlation Sig. (2tailed) N	1 464	**0.55 464
Q.9.2. Attitude: I believe condoms should be used if a person my age is sexually active Pearson's r Correlation Sig. (2tailed) N	**0.55 464	1 464

** Pearson's r correlation coefficient 0.55 is significant at the 0.01 level (2tailed)

Table 10. Correlation Between Reproductive Knowledge and Attitude Towards the use of Condoms

Fertilization of the egg occurs in the uterus		Attitude: I believe condoms should be used if a person my age is sexually active			Grand Total count	Grand % of Total
		Strongly Agree	Agree	Disagree		
True	% Q.6.3 % Q.9.2	20.1 33.0	56.9 50.3	22.9 53.2	464	100%
Total count		213				
% of Total Count		45.9				
False	%Q.6.3 % Q.9.2	37.7 65.9	46.8 44.2	15.6 38.7		
Total count		228				
% of Total Count		49.1				
Don't know	%Q.6.3 % Q.9.2	6.7 1.1	60.0 5.5	33.3 8.1		
Total count		23				
% of Total Count		5.0				

Pearson's r Correlation = 0.55 Substantial association	Q.6.1. Fertilization of the egg occurs in the uterus	Q.9.2.Attitude:I believe condoms should be used if a person my age is sexually active
Q.6.1. Fertilization of the egg occurs in the uterus Pearson's r Correlation Sig. (2tailed) N	1 464	**0.59 464
Q.9.2. Attitude: I believe condoms should be used if a person my age is sexually active Pearson's r Correlation Sig. (2tailed) N	**0.59 464	1 464

** Pearson's r correlation coefficient 0.59 is significant at the 0.01 level (2tailed).

7.7.4 CONTRACEPTIVE KNOWLEDGE AND ATTITUDE TOWARDS THE USE OF CONDOMS

Pearson's r correlation between the variables of contraceptive knowledge and attitude towards use of condom had moderate associations. Pearson's r correlation of 0.47 suggests that students who answered the question correctly that girls cannot get pregnant the first time they have sex are more likely to use condom than those students who answered incorrectly. Of the 34.5 percent (160 students) who answered the question correctly that girls cannot get pregnant the first time they have sex, a total of 77.8 percent agreed to use condoms. These data suggest that students who are more knowledgeable in contraception are in some way more likely to use condom when they engage in sexual intercourse.

Table 11. Correlation of Contraceptive Knowledge and Attitude Towards the use of Condoms

Girls cannot get pregnant the first time they have sex		Attitude: I believe condoms should be used if a person my age is sexually active			Grand Total count	Grand % of Total
		Strongly Agree	Agree	Disagree		
True	% Q.7.2 % Q.9.2	35.7 63.6	49.0 47.3	15.3 38.7	464	100%
Total count		233				
% of Total Count		50.2				
False	% Q.7.2 % Q.9.2	21.3 26.1	56.5 37.4	22.2 38.7		
Total count		160				
% of Total Count		34.5				
Don't know	% Q.7.2 % Q.9.2	18.8 10.2	52.1 15.3	29.2 22.6		
Total count		71				
% of Total Count		15.3				
Pearson's r Correlation = 0.47 Moderate association		Girls cannot get pregnant the first time they have sex			Q.9.2.Attitude:Ibelieve condoms should be used if a person my age is sexually active	
Q.6.1. Girls cannot get pregnant the first time they have sex Pearson's r Correlation Sig. (2tailed) N		1 464			**0.47 464	
Q.9.2. Attitude: I believe condoms should be used if a person my age is sexually active Pearson's r Correlation Sig. (2tailed) N		**0.47 464			1 464	

** Pearson's r correlation coefficient 0.47 is moderately significant at the 0.01 level (2-tailed)

7.7.5 STI/HIV KNOWLEDGE AND ATTITUDE TOWARDS THE USE OF CONDOMS

Pearson's r correlation between the variables STI/HIV knowledge and attitudes toward the use of condoms had substantial association. Pearson's r correlation of 0.51 suggests that students who

answered correctly the questions about STI/HIV knowledge are more likely to use condom than those students who answered incorrectly.

Table 12. STI/HIV Knowledge and Attitude Towards the use of Condoms

A highly reliable method of avoiding pregnancy and STI/HIV is to use a condom and spermicidal		Attitude: I believe condoms should be used if a person my age is sexually active			Grand Total count	Grand % of Total
		Strongly Agree	Agree	Disagree		
True	**% Q.8.1** **% Q.9.2**	**31.1** **53.4**	**47.0** **43.6**	**21.9** **53.2**	**464**	**100%**
Total count		**223**				
% of Total Count		**48.1**				
False	**% Q.8.1** **% Q.9.2**	**39.0** **46.6**	**48.6** **31.3**	**12.4** **21.0**		
Total count		**155**				
% of Total Count		**33.4**				
Don't know	**% Q.8.1** **% Q.9.2**		**71.9** **25.2**	**28.1** **25.8**		
Total count		**86**				
% of Total Count		**18.5**				

Pearson's r Correlation = 0.51 Substantial association	**A highly reliable method of avoiding pregnancy and STI/HIV is to use a condom and spermicidal**	**Q.9.2. Attitude:I believe condoms should be used if a person my age is sexually active**
A highly reliable method of avoiding pregnancy and STI/HIV is to use a condom and spermicidal	**1**	****0.51**
Pearson's r Correlation Sig. (2tailed) N	**464**	**464**
Q.9.2. Attitude: I believe condoms should be used if a person my age is sexually active	****0.51**	**1**
Pearson's r Correlation Sig. (2tailed) N	**464**	**464**

** Pearson's r correlation coefficient 0.51 is significant at the 0.01 level (2tailedW)

Of the 48.1 percent of the students (223) who answered correctly the question that a highly reliable method of avoiding pregnancy and STI/HIV is to use a condom and spermicidal, a total of 78.1 percent agreed to use condoms. These data suggest that students who are more knowledgeable in STI/HIV are more likely to use condoms when they engage in sexual intercourse.

7.7.6 BEHAVIOR AND ATTITUDE TOWARDS THE USE OF CONDOMS

Pearson's r correlation between the variables sexual behavior and attitudes toward the use of condoms had a low association. Pearson Correlation of 0.08 indicates that students who agreed to have sex with several different people could independently use condoms. Of the 42.5 percent of the students (197) who agree to have sex with several different people, 46 percent disagreed to use condoms and 53.4 percent agreed to use condoms.

Table 13. Sexual Behavior and Attitude Towards the Use of Condoms

I believe it is OK for people my age to have sex with several different people		Attitude: I believe condoms should be used if a person my age is sexually active			Grand Total count	Grand % of Total
		Strongly Agree	Agree	Disagree		
Agree	% Q.9.1 % Q.9.2	5.3 8.0	48.1 39.3	46.6 52.7	464	100%
Total count		197				
% of Total Count		42.5				
Disagree	%Q.9.1 % Q.9.2	5.2 5.7	94.8 94.3			
Total count		142				
% of Total Count		30.6				
Strongly disagree	% Q.9.1 % Q.9.2	90.5 86.4	9.5 4.9			
Total count		125				
% of Total Count		36,9				
Pearson's r Correlation = 0.08 low association		I believe it is OK for people my age to have sex with several different people			Q.9.2.Attitude:I believe condoms should be used if a person my age is sexually active	
I believe it is OK for people my age to have sex with several different people Pearson's r Correlation Sig. (2tailed) N		1 464			**0.08 464	
Q.9.2. Attitude: I believe condoms should be used if a person my age is sexually active Pearson's r Correlation Sig. (2tailed) N		**0.08 464			1 464	

** Pearson's r correlation coefficient 0.08 is significant at the 0.01 level (2-tailed).

In our sample (16 students), 3.4 percent of the students who reported having had sexual intercourse, 18.8 percent indicated that they would not use condoms in the future. These students are at risk for STIs and early pregnancies and could benefit from interventions to enhance their self-efficacy for protective sexual behaviors.

This study found that respondents, who had greater opinion to use condoms, were more likely to report using condoms in the future. These results are consistent with previous studies that have demonstrated significant relationships between self efficacy and use of condoms[35].

8. SUMMARY

The findings of this study are in some ways discouraging and alarming. These students are supposed to have some knowledge about sexuality according to the class curriculum for eleventh and twelfth standard students. Knowledge at this point is sorely lacking and sometimes dangerously absent. There are gaps in knowledge shown here that should alarm parents and teachers. Adults sometimes assume that higher secondary students or teens in general are very knowledgeable about sexuality and reproduction, because they are exposed to the media, such as television, movies, and magazines. The results show that students lack correct information about sexuality issues in general. Also there is evidence here that shows that the schools and their parents are providing insufficient sexuality education for their adolescents.

The prevalence of the risk behaviors among this group of eleventh and twelfth standard students indicates a need for broad-based educational efforts. Such efforts should include education in the schools, increased availability of resources that aid in the prevention of STI/HIV and early pregnancy, patient counseling, and mass media information campaigns. An educational approach that involves more than providing information is needed. Attitude change requires an exploration of

personal values, while increasing self-efficacy requires role modeling and successful experience with the desired behavior. Those adolescents who have had sex and those who never have had sex may need special attention in educational programs, as this study demonstrated that some students are more likely to use condoms than others. It is important to include all higher secondary students in Tamil Nadu for reproductive and sex education programs that enhance practices of protective sexual behavior and decrease the risk of contracting STI/HIV and early pregnancies.

9. CONCLUSION

The results found in this study demonstrated that there is a need to increase the level of knowledge of students in reproduction, contraception and STI/HIV. Also, there is a need for these students to increase availability of resources that aid in the prevention of early pregnancies. The educational project to be developed to increase student's knowledge and attitudes to enhance their practices of protective sexual behavior should include mass media information campaigns, students counseling with trained people, role modeling, or watching others perform or talk about the task such as having peer leaders demonstrate how to put a condom on an artificial model and feedback on physiological arousal states that help students infer their vulnerability to stress and anxiety.

10. RECOMMENDATIONS

The results of this study showed the association between Knowledge, Attitudes, and Self-Efficacy and Sexual Risk Behaviors of higher secondary students and at the same time gave some direction for intervention. However, much more work is needed, including the expansion of predictive variables, longitudinal studies, and testing of intervention to influence change in predictor variables. What teens know about their own bodies, about sexuality, about how to protect themselves, about abstinence, and about the threats to their health should guide the efforts for future studies to develop sexual education programs. These data provide testimony that much more is needed.

The findings of this study will have an impact upon adolescents in Tamil Nadu as more and more projects are implemented and adolescents will benefit from sexual education programs as a curriculum in class. Furthermore the impact of all educational programs and research efforts should extend well beyond Tiruvallur District, they should extend to the schools that have not yet established sexual education programs. Most of the research on programs to reduce adolescents sexual risk behaviors should be conducted in coherence with countries that are

currently working in these research projects and have already learned the effects that these programs on adolescents behavior.

There are still many opportunities to conduct research and programs that could benefit adolescents throughout or within Tamil Nadu. Working with these projects enhance researchers to continue building a foundation of knowledge that will benefit future generations of youth, in this country and throughout the world.

11. LIMITATIONS

1. It is a one time study in selected government schools in one block in Tiruvallur district .

2. Non school-going adolescents were not included in the study.

3. The topic being so sensitive led to denial of parental consent for many and also nine students did not complete the questionnaire.

4. Oral interaction with the students was very minimal because the students were hesitant and the students opted to fill up the questionnaire themselves.

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ABBREVIATIONS

WHO	**World Health Organisation.**
HIV	**Human Immunodeficiency Virus**
AIDS	**Acquired Immunodeficiency Syndrome**
STI	**Sexually Transmitted Infection**
RTI	**Reproductive Tract Infection**
NFHS	**National Family Health Survey**
RCH	**Reproductive and Child Health**
NGO	**Non Governmental Organisation**
IMR	**Infant Mortality Rate**
MMR	**Maternal Mortality Ratio**
TFR	**Total Fertility Rate**
LBW	**Low Birth Weight**
UNICEF	**United Nations International Children's Education Fund**
FHI	**Family Health International**
PRB	**Population Reference Bureau**

LETTER OF PERMISSION

From

Investigator

To

The Director,
Department of School Education,
College Road, Chennai.

Respected Sir,

Sub: *Requesting permission to do a study on Knowledge, attitude and self-efficacy on reproductive and sexual health among 11th & 12th Standard Students of selected Govt. Higher Secondary Schools in Poonamallee Block, Tiruvallur District, Tamil Nadu - Reg.*

I am a final year post graduate in M.D. (Community Medicine) in the Institute of Community Medicine, Madras Medical College, Chennai and I have been approved by our Institute to undertake a study to assess the knowledge, attitude and self-efficacy on reproductive and sexual health among 11th & 12th standard students of selected Govt. Higher Secondary Schools in Poonamallee Block, Tiruvallur District, Tamil Nadu.

I request you to kindly grant me permission to carry out this study in the selected schools in Tiruvallur District.

Thanking you,

Chennai Yours sincerely,

(INVESTIGATOR)

From

Investigator.

To

The Chief Educational Officer,
210/5, C.V.Naidu Road, Tiruvallur.

Respected Sir,

Sub: *Requesting permission to do a study on Knowledge, attitude and self-efficacy on reproductive and sexual health among 11th & 12th Standard Students of selected Govt. Higher Secondary Schools in Poonamallee Block, Tiruvallur District, Tamil Nadu - Reg.*

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I request you to kindly grant me permission to carry out this study in the selected schools in Tiruvallur District.

Thanking you,

Chennai Yours sincerely,

(INVESTIGATOR)

From

Investigator.

To

The Head Master / Head Mistress,
Government Higher Secondary School,

Respected Sir,

Sub: *Requesting permission to do a study on Knowledge, attitude and self-efficacy on reproductive and sexual health among 11th & 12th Standard Students of your school - Reg.*

I am a final year post graduate in M.D. (Community Medicine) in the Institute of Community Medicine, Madras Medical College , Chennai and I have been approved by our Institute to undertake a study to assess the knowledge, attitude and self-efficacy on reproductive and sexual health among 11th & 12th standard students of selected Govt. Higher Secondary Schools in Poonamallee Block, Tiruvallur District, Tamil Nadu.

I request you to kindly grant me permission to carry out this study in your school.

Thanking you,

Chennai Yours sincerely,

(INVESTIGATOR)

INTRODUCTION TO PARTICIPANTS

This Study is completely confidential . We are interested in learning more about your knowledge, thoughts, opinions, and feelings about reproductive and sexual health. If you have any question or you do not understand, please let us know we are here to help you.

We hope you will help us by completing this survey. We will use your answers to propose school health education programs. Your answers will not be available to anyone at any time. All the information you give us will be kept private. Do not put your name on this questionnaire.

Whether or not you answer the questions it will not affect your grades. If you decide not to participate, your teacher will provide you with some other activity during this class. However, we really need your help to keep young people healthy.

Please remember :

* Do not put your name on this form
* Your answers are private. We will not tell anyone what you write
* You will not be graded on this exercise
* Please take your time and answer carefully.

QUESTIONNAIRE - ENGLISH VERSION

I. Demographic Data (Please ✓ check one)

1. Sex

   Male _____1 Female _____ 2

2. Age

   15-16 _____ 1 16-17 _____ 2 17-18 _____ 3

   More than 18 _____ 4

3. Class

   XI _____ 1 XII _____ 2

4. Religion

   Hindu _____ 1 Christian ____ 2 Muslim _____ 3

   Others _____4

5. Family Composition :

   I live with both of my parents_____ 1

   I live with my mother only _____ 2

   I live with my father only_____ 3

   I live with other relatives _____ 4

II. Knowledge about reproduction, contraception, and STI/HIV

6. Reproduction

Below are some statements about reproductive physiology knowledge. For each question, check one of the answer you think is correct. If you don't know the answer, check one that is labeled Don't Know.

6.1 The fluid that contains the male sperm is called semen.

True _____ 1 False _____ 2 Don't know _____ 3

6.2 The male hormone is called testosterone.

True _____ 1 False _____ 2 Don't know _____ 3

6.3 Fertilization of the ovum occurs in the uterus

True _____ 1 False _____ 2 Don't know _____ 3

6.4 There is usually a problem if a teenage girl doesn't get her period by the time she is 14 years .

True _____ 1 False _____ 2 Don't know _____ 3

6.5 Urination and menstruation occur through the same opening in females.

True _____ 1 False _____ 2 Don't know _____ 3

6.6 It is dangerous to have sexual intercourse during a girl's period.

True _____ 1 False _____ 2 Don't know _____ 3

7. Contraception

Below are some statements about Birth Control Knowledge. For each question, check one of the answer you think is correct. If you don't know the answer, check one that is labeled Don't Know.

7.1 Pregnancy happens when a sperm fertilizes an ovum (egg).

True _____ 1 False _____ 2 Don't know _____ 3

7.2 Girls cannot get pregnant the first time they have sex.

True _____ 1 False _____ 2 Don't know _____ 3

7.3 If a girl has sex only once in a while, she really doesn't need birth control.

True _____ 1 False _____ 2 Don't know _____ 3

7.4 Urinating after sex sometimes prevents pregnancy

True _____ 1 False _____ 2 Don't know _____ 3

7.5 Douching is a method of birth control

True _____ 1 False _____ 2 Don't know _____ 3

7.6 Sperm can live for a few days in the women's body

True _____ 1 False _____ 2 Don't know _____ 3

7.7 Letting semen drip out of the female organ after sex prevents pregnancy

True _____ 1 False _____ 2 Don't know _____ 3

8. STI / HIV

Below are some statements about STI / HIV knowledge. For each question, check one of the answer you think is correct. If you don't know the answer, check one that is labeled Don't know.

8.1 A highly reliable method of avoiding pregnancy and STI / HIV is to use a condom and spermicide.

True _____ 1 False _____ 2 Don't know _____ 3

8.2 Teenage girls cannot get HIV from teenage boys who have had sex only a few times.

True _____ 1 False _____ 2 Don't know _____ 3

8.3 STIs usually go away on their own.

True _____ 1 False _____ 2 Don't know _____ 3

8.4 It is possible to have more than one STI at a time

True _____ 1 False _____ 2 Don't know _____ 3

8.5 Only people who look sick can spread the AIDS virus.

True _____ 1 False _____ 2 Don't know _____ 3

8.6 A person can get AIDS by touching or hugging someone with AIDS

True _____ 1 False _____ 2 Don't know _____ 3

8.7 You can get AIDS by being bitten by a mosquito that has bitten someone with AIDS.

True _____ 1 False _____ 2 Don't know _____ 3

III. Attitudes and self - efficacy related with sexual risk behaviors.

Below are some questions about expressing your opinions, feelings, attitudes, and intentions about sexual risk behaviors. Check the answer that best describes how do you feel, what do you think or what would you do.

Please think about how you would handle these situations. If you have never had sexual intercourse, just tell us what do you think or what would you do.

These next questions help us to find out what young people IN GENERAL are doing so we can know what to teach you about reproductive health programs in school.

9. Attitude

9.1 I believe it is OK for people my age to have sex with several different people.

Strongly Agree ____ 1 Agree _____ 2 Disagree ____ 3

Strongly Disagree _____ 4

9.2 I believe condoms should be used if a person my age is sexually active

Strongly Agree ____ 1 Agree _____ 2 Disagree ____ 3

Strongly Disagree _____ 4

This time we want to know what you think makes a person "cool" or popular Please check the statement that show what you think.

9.3 Having sexual intercourse makes a boy and girl popular

Strongly Agree ____ 1 Agree _____ 2 Disagree ____ 3

Strongly Disagree _____ 4

9.4 Having sexual intercourse at my age is a "cool" thing for a girl and boy to do.

Strongly Agree ____ 1 Agree _____ 2 Disagree ____ 3

Strongly Disagree _____ 4

9.5 It is important to talk with your parents or counselors about your sexual doubts.

Strongly Agree ____ 1 Agree _____ 2 Disagree ____ 3

Strongly Disagree _____ 4

10. Self - efficacy

10.1 I would refuse to have sexual intercourse without condom.

Strongly Agree ____ 1 Agree _____ 2 Disagree ____ 3

Strongly Disagree _____ 4

10.2 I would insist on using a condom even if my partner didn't want to.

Strongly Agree ____ 1 Agree _____ 2 Disagree ____ 3

Strongly Disagree _____ 4

10.3 Have you ever had sexual intercourse? (by sexual intercourse, we mean putting a male reproductive organ in a female reproductive organ). Please check only one.

Yes _____ 1 No _____ 2

10.4 Do you feel worried that you might get pregnant if you are a girl or that you might get a girl pregnant if you are a boy?

Yes _____ 1 No _____ 2

10.5 If I didn't have a condom, I would have sexual intercourse anyway.

Yes _____ 1 No _____ 2

Thank you for participating in the study

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6.5]Ö}¸® ©õuÂ»US® J÷µ xÁõµzvß ÁÈ¯õP uõß öÁÎ÷¯ÖQÓx.

B® _____ 1 CÀø» _____ 2 öu¶¯ÂÀø» _____ 3

6.6 J¸ ö£sqhß AÁÒ ©õuÂ»UQß ÷£õx Eh¾ÓÄ öPõÒÁx B£zx

B® _____ 1 CÀø» _____ 2 öu¶¯ÂÀø» _____ 3

7. **P¸zuøh**

P¸zuøh AÔÄ £ØÔ¯]» ÁõUQ¯[PÒ R÷Ç öPõkUP¨£mkÒÍÚ. JÆöÁõ¸ ÂÚõÂØS® }[PÒ \¶ GßÖ |øÚUS® £vø» SÔ¨¤k[PÒ. £vÀ öu¶¯õÂiß, öu¶¯ÂÀø» Gß£vÀ SÔUPÄ®.

7.1 Boß E°µqÄ® ö£soß P¸¬møh²® Cøn²® ÷£õx J¸ ö£s Pº¨£® AøhQÓõÒ.

B® _____ 1 CÀø» _____ 2 öu¶¯ÂÀø» _____ 3

7.2 J¸ ö£s ¬uß¬øÓ¯õP Eh¾ÓÄ øÁzx öPõÒÐ® ÷£õx Pº¨£® AøhÁvÀø».

B® _____ 1 CÀø» _____ 2 öu¶¯ÂÀø» _____ 3

7.3 J¸ ö£s G¨÷£õuõÁx J¸ ¬øÓuõß Eh¾ÓÄ öPõÒQÓõÒ GßÓõÀ AÁÐUS Pº¨£zuøh ÷uøÁ°Àø»

B® _____ 1 CÀø» _____ 2 öu¶¯ÂÀø» _____ 3

7.4 Eh¾ÓÄUS¨ ¤ß]Ö}º PÈ¨£x Pº¨£©øhÁøuz ukUP»õ®.

B® _____ 1 CÀø» _____ 2 öu¶¯ÂÀø» _____ 3

7.5 EhØSÈUPÊÁÀ J¸Âu©õÚ P¸zuøh ¬øÓ¯õS®

B® _____ 1 CÀø» _____ 2 öu¶¯ÂÀø» _____ 3

7.6 Boß E°µq]» {õmPÐUS ö£soß Eh®¤À E°¸hß C¸US®

B® _____ 1 CÀø» _____ 2 öu¶¯ÂÀø» _____ 3

7.7 Eh¾ÓÄUS¨¤ß ö£s EÖ¨¤À C¸¢x ""ö\©øÚ" öÁÎ÷¯ØÔ ÂmhõÀ Pº¨£® AøhÁøuz uÂºUP»õ®.

B® _____ 1 CÀø» _____ 2 öu¶¯ÂÀø» _____ 3

8. £õÀÂøÚ ÷{õ´/Ga.I.Â.

£õÀÂøÚ ÷{õ´/Ga.I.Â. £ØÔ¯]» ÁõUQ¯[PÒ R÷Ç öPõkUP¨ £mkÒÍÚ. JÆöÁõ¸ ÂÚõÂØS® }[PÒ \¶ GßÖ |øÚUS® £vø» SÔ¨¤k[PÒ. £vÀ öu¶¯õÂiß, öu¶¯ÂÀø» Gß£vÀ SÔUPÄ®.

8.1 Pº¨£® ©ØÖ® £õÀÂøÚ ÷{õ´PøÍ/ HIV BQ¯ÁØøÓ ukUP BqøÓ²® Â¢x öPõÀ¼²® E£÷¯õQ¨£x J¸ {®£P©õÚ ÁÈ

B® _____ 1 CÀø» _____ 2 öu¶¯ÂÀø» _____ 3

8.2]» ¬øÓ ©mk÷© Eh¾ÓÂÀ Dk£mh ÁÍºCÍ® BsPÎhª¸¢x ÁÍºCÍ® ö£sPÐUS £» öuõØÖ HØ£hõx

B® _____ 1 CÀø» _____ 2 öu¶¯ÂÀø» _____ 3

8.3 £õÀÂøÚ ÷{õ´PÒ uõ©õP÷Á Sn©õQÂk®

B® _____ 1 CÀø» _____ 2 öu¶¯ÂÀø» _____ 3

8.4 J¸Á¸US JßÖUS® ÷©Ø£mh £õÀÂøÚ ÷{õ´PÒ J÷µ ÷{µzvÀ C¸UP Tk®.

B® _____ 1 CÀø» _____ 2 öu¶¯ÂÀø» _____ 3

8.5 öÁÎ£õºøÁUS® ÷{õ¯õÎ¯õP ÷uõØÓ¬øh¯ÁºPÍõÀ uõß G´mì Q¸ª £µÄQÓx.

B® _____ 1 CÀø» _____ 2 öu¶¯ÂÀø» _____ 3

8.6 G´mì ÷{õ´ EÒÍ J¸Áøµ öuõkÁuõ¾® Aøn¨£uõ¾® G´mì ÷{õ´ Áµ Áõ´¨¦ÒÍx.

B® _____ 1 CÀø» _____ 2 öu¶¯ÂÀø» _____ 3

8.7 G´mì ÷{õ´ EÒÍ J¸Áøµ Pizu öPõ_ {®ø© Pï¨£uõÀ {©US® G´mì ÷{õ´ Áµ Áõ´¨¦ÒÍx

B® _____ 1 CÀø» _____ 2 öu¶¯ÂÀø» _____ 3

III. R÷Ç öPõkUP¨£mkÒÍ ÂÚõUPÒ £õ¾ÓÄ Chº {hzøu £ØÔ¯ E[PÒ P¸zxPÒ, Gsn[PÒ, ©Ú¨£õßø©, ÷{õUP[PÒ BQ¯ÁØøÓ öÁÎ¨£kzx®. E[PÒ Gsnzøu÷¯õ ö\´øPø¯÷¯õ ÂÁ¶US® ö£õ¸zu©õÚ £vø» SÔ¨¤k[PÒ.

C¢u ©õv¶¯õÚ `Ì|ø»PøÍ }[PÒ G¨£i \©õÎ¨¥ºPÒ GßÖ ÷¯õ]²[PÒ. }[PÒ Cx Áøµ Eh¾ÓÄ öPõÒÍÂÀø» GßÓõÀ, }[PÒ Cx £ØÔ GßÚ | øÚUQÕºPÒ AÀ»x ö\´ÃºPÒ GßÖ SÔ¨¤k[PÒ.

¤ßÁ¸® ÂÚõUPÒ ÁÍºCÍ® £¸ÁzvÚ¶ß ö£õxÁõÚ ö\´øP°øÚ G[PÐUS GkzxUPõmk®. CuøÚU öPõsk E[PÐUS CÚ¨ö£¸UP {» PÀÂ £ØÔ GßÚ PØÖ uµ ÷Ásk® GßÖ öu¶¢x öPõÒ÷Áõ®.

9.1 Gß Á¯øu JzuÁº £»¸hß Eh¾ÓÄ öPõÒÁx \¶ GßÖ {®¦Q÷Óß.

wÃµ©õP J¨¦ öPõÒQ÷Óß _____ 1 J¨¦ öPõÒÍÂÀø» _____ 3

J¨¦ öPõÒQ÷Óß _____ 2 wÂµ©õP J¨¦ öPõÒÍÂÀø» _____ 4

9.2 Gß Á¯øu JzuÁº Eh¾ÓÄ öPõÒÐ® ÷£õx BqøÓ E£÷¯õQUP ÷Ásk® GßÖ {®¦Q÷Óß.

wÃµ©õP J¨¦ öPõÒQ÷Óß _____ 1 J¨¦ öPõÒÍÂø» _____ 3

J¨¦ öPõÒQ÷Óß _____ 2 wÂµ©õP J¨¦ öPõÒÍÂÀø» _____ 4

9.3 Eh¾ÓÄ öPõÒÁx J¸ Bs AÀ»x ö£søn ¤µ£»¨£kzx®

wÃµ©õP J¨¦ öPõÒQ÷Óß _____ 1 J¨¦ öPõÒÍÂø» _____ 3

J¨¦ öPõÒQ÷Óß _____ 2 wÂµ©õP J¨¦ öPõÒÍÂÀø» _____ 4

9.4 Gß Á¯øu JzuÁº Eh¾ÓÄ öPõÒÁx \õuõµn©õÚ Âå¯®

wÃµ©õP J¨¦ öPõÒQ÷Óß _____ 1 J¨¦ öPõÒÍÂø» _____ 3

J¨¦ öPõÒQ÷Óß _____ 2 wÂµ©õP J¨¦ öPõÒÍÂÀø» _____ 4

9.5 ""ö\Uì" \®£¢u©õÚ \¢÷uP[PøÍ E[PÒ ö£Ø÷Óõ¸hß AÀ»x B÷»õ\P¶h® ÷£_Áx ¬UQ¯®

wÃµ©õP J¨¦ öPõÒQ÷Óß _____ 1 J¨¦ öPõÒÍÂø» _____ 3

J¨¦ öPõÒQ÷Óß _____ 2 wÂµ©õP J¨¦ öPõÒÍÂÀø» _____ 4

10.1 BqøÓ £¯ß£kzuõ©À Eh¾ÓÄ öPõÒÁøu ©Özx Âk÷Áß

wÃµ©õP J¨¦ öPõÒQ÷Óß _____ 1 J¨¦ öPõÒÍÂø» _____ 3

J¨¦ öPõÒQ÷Óß _____ 2 wÂµ©õP J¨¦ öPõÒÍÂÀø» _____ 4

10.2 GßÝhß Eh¾ÓÂÀ Dk£k£Áº ©Özuõ¾® BqøÓø¯ E£÷¯õQ¨£øu {õß Pmhõ¯¨£kzx÷Áß.

wÃµ©õP J¨¦ öPõÒQ÷Óß _____ 1 J¨¦ öPõÒÍÂø» _____ 3

J¨¦ öPõÒQ÷Óß _____ 2 wÂµ©õP J¨¦ öPõÒÍÂÀø» _____ 4

10.3 }[PÒ G¨÷£õuõÁx Eh¾ÓÄ øÁzxU öPõshx Eshõ? (Bs EÖ¨ø£ ö£s EÖ¨¤ÝÒ ö\¾zxÁøu Eh¾ÓÄ GßÖ SÔ¨¤kQ÷Óõ®) H÷uÝ® JßøÓ SÔUPÄ®.

B® _____ 1 CÀø» _____ 2

10.4 }[PÒ ö£snõP C¸¢uõÀ Pº¨£©øh¢x Âk÷Áß Gß÷Óõ AÀ»x BnõP C¸ ¢uõÀ J¸ ö£søn Pº¨£©õUQ Âk÷Áß Gß÷Óõ PÁø»¨£mhx Eshõ?

B® _____ 1 CÀø» _____ 2

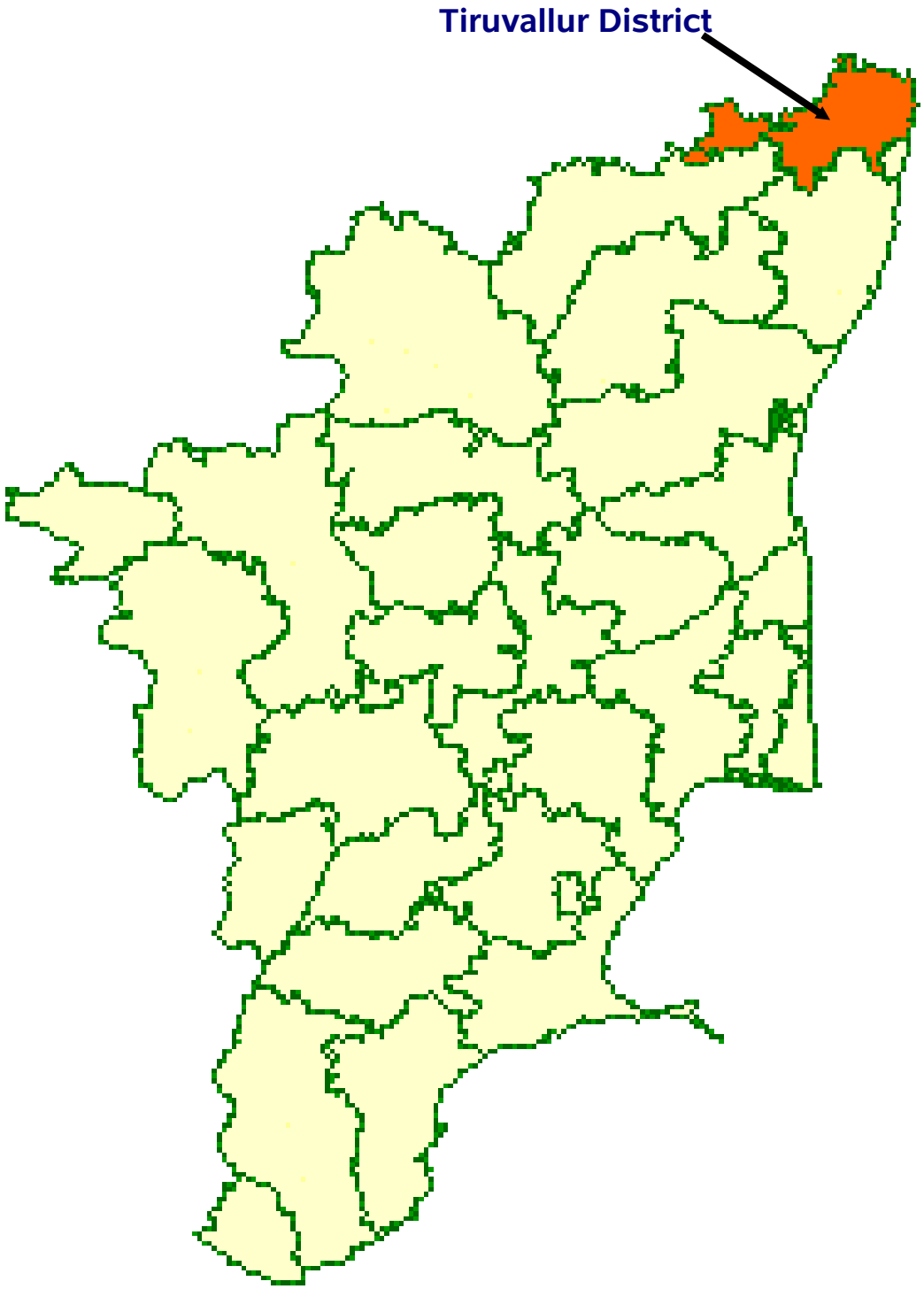
10.5 GßÛh® BqøÓ CÀø» GßÓõ¾® £µÁõ°Àø» GßÖ Eh¾ÓÄ öPõÒ÷Áß.

B® _____ 1 CÀø» _____ 2

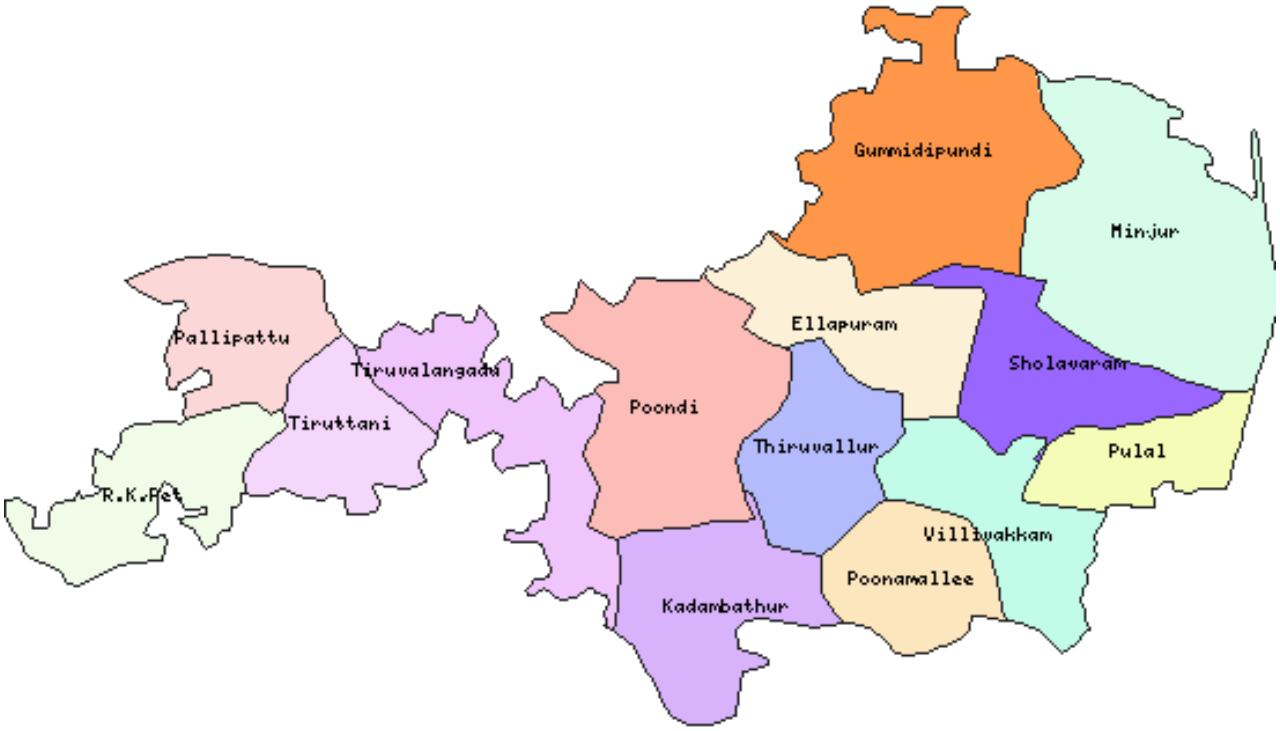
E[PÒ BuµÂØS G[PÎß ©Ú©õº¢u {ßÔ.

MAPS

TAMIL NADU



TIRUVALLUR DISTRICT



TIRUVALLUR : Poonamallee Block