

## Development and Evaluation of an Intervention to Meet the Reproductive Health Needs of Adolescents in India: A Randomized Controlled Trial

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**ABSTRACT** Addressing needs of adolescents is a huge challenge in India due to various cultural and social barriers. The family and educational institutions exercise greater control over the sexual behavior of unmarried youth in India than in the West. In order to provide acceptable services with adequate utilization, in-depth exploration of social and cultural barriers and understanding the needs and expectations of adolescents is a great necessity. Under this backdrop, the project was undertaken with following objectives. The overall aim of the study was to design an intervention package for the reduction of sexual and reproductive health problems of adolescents and to evaluate its impact. The specific objective of this study was to improve the knowledge on sexual and reproductive health issues among the adolescents and to strengthen their capacity to become an active player in advocating for open discussion on adolescent sexuality. The randomized controlled trial study was carried out among 200 rural adolescents at Cuddalore district of Tamil Nadu. The study period was from May 2007 to December 2009. The quantitative evaluation of programmes shows that intervention programs have changed the adolescent girls' perception, attitude and behaviour on puberty and menstrual issues. A significant positive shift was observed in all aspects with particular improvement in the areas of menstrual cleanliness. It increased their knowledge on reproductive health and understanding on HIV/AIDS. Further, it also improved their parental relations, self-confidence on various issues.

### INTRODUCTION

Adolescence is an important period, in which a child undergoes biological transition, which is characterized by puberty, related changes in physical appearance and the attainment of reproductive capability, psychological or cognitive transition, which reflects an individual's thinking, and social transition, which is related to rights, privileges and responsibilities of an individual (Agarwal 2008). In India, today the adolescents population (aged 10–19) is representing little more than one-fifth (22 per cent) of the total population (Kushwah and Mittal 2007). Such a large group represents a major human resource that can contribute to the overall development of the country. It is expected that this age group will continue to grow reaching over 223 millions in 2015 (Registrar General India 2001).

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These adolescents are the most vulnerable group whose taste and preferences, attitude and behaviour always involve a certain amount of risk. As they mature and become sexually active, more adolescents face serious health risks—today millions of adolescents are faced with the problems like early marriage and childbearing, incomplete education, and the threat of HIV/AIDS (El-Gilany et al. 2005). The adolescent's health needs, behaviour and expectations are distinctive and routine health care services are not well geared to provide these services (Agampodi and Agampodi 2008). Data indicate that this is the most vulnerable group with respect to HIV risk caused by unsafe sex (Barnett and Schuller 2000). Most of them face these risks with too little factual information, too little guidance about sexual responsibility, and too little access to health care. Their educational and health status, their readiness to take on adult roles and responsibilities, and the support they receive from their families, communities and governments will determine their own future and the future of their countries.

Therefore, the reproductive needs of these groups should be considered and proper training and guidance are required to change their

perceptions and thus reduce risky behaviour. Moreover, the 1994 International Conference on Population and Development held in Cairo recommended that governments should focus more attention on adolescents through an integrated approach to their health, education and social needs (Akhter 2003). Though hospital services could not cater to the needs of adolescents, it becomes necessary to reorganize clinical services for adolescents through institutions or certain outreach activities. Because a vast majority of the Indian population lives in rural areas, outreach efforts could also be more useful in this regard.

However, addressing the needs of adolescents is a huge challenge in countries like India due to various cultural and social barriers. It is also commonly assumed that family and educational institutions exercise greater control over the sexual behavior of unmarried youth in India than in the West (Joshi et al. 2006). In order to provide acceptable services with adequate utilization, in-depth exploration of social and cultural barriers and understanding the needs and expectations of adolescents is a great necessity. Under this backdrop, the project titled "Improving skill building for meeting the reproductive health needs of on-campus and adolescents, Tamil Nadu" is being undertaken with following objectives.

### Objectives

The main aim of this study was to improve the knowledge on sexual and reproductive health issues among the adolescents and to strengthen their capacity to become an active player in advocating for open discussion on adolescent sexuality. The specific objectives are:

- (i) To evaluate the sexual and reproductive health status of female adolescents in the study area;
- (ii) To launch a six months long comprehensive intervention package through the trained primary agents at the villages with aim to
  - offer better understanding of physiological and emotional changes during puberty and associated issues among the rural unmarried adolescents
  - increase access to reproductive health information/counseling, and to clinical reproductive health services for the unmarried adolescents

- build self-esteem, and to improve communication among family members
- understand the decision making processes, enhance their understanding about reproductive and sexual health problems and treatment seeking behavior
- to provide general health care advice/services and health counseling about drug abuse, HIV/AIDS and RTI/STI.

Finally, to assess the behavior changes among the adolescent communities regarding reproductive health issues after the intervention programmes

### STUDY DESIGN AND METHODS

Present study was conducted in and around the Annamalai University campus which is situated in the Cuddalore district, Tamil Nadu. The study period was from May 2007 to December 2009. The study was based on primary data collected from adolescents.

The study was carried out in three different phases. The first phase of the study was to assess the sexual and reproductive health status of adolescents in the study area. Awareness raising and knowledge improvement were the main targets in the second phase of the project at the study locations. The integration of primary agents' activities was the target of the second phase in order to provide RH services in a more efficient manner. Evaluation of the behavior changes among the girls with regard to reproductive health issues after the intervention programmes were the central intention of the third phase.

**Selection of Study Area:** Chidambaram taluk in Tamil Nadu state has been chosen as study area for collecting data from the female adolescents where the Annamalai University is located. The Department of Adult and Continuing Education, Annamalai University helped to identify the sample study villages. Chidambaram taluk has 459 villages, and within 15 km radius of University about 137 villages were found. The Department of Adult and Continuing Education had established Continuing Education Centers at 20 selected villages and those centers cover 89 villages (including hamlets). Through these centers the Adult and Continuing Education department extending various extension activities for the betterment of the rural societies. The department had appointed a woman as Continuing

Education Worker (CEW) for each village (the village in-charge). With the help of these CEWs, the research team selected two villages which have a sizeable proportion of adolescent female population namely, Thillaivedangan and C. Melavanniyur.

**Sampling and Selection of Participants:** A total of 279 female unmarried adolescents were identified in these selected villages (Thillaivedangan had 169 adolescents and C. Melavanniyur had 110 adolescents). The research team decided to select 200 respondents as sample population and additionally 10 respondents were included in the sample, to take care of non-response due to various reasons. A simple random sample method was applied to select the sample population. The specially trained field investigators employed to collect the data from the respondents, administering a detailed survey schedule.

#### **Intervention programmes**

**Selection of Primary Agents (Volunteers):** The research team traced 20 volunteers with the help of the Continuing Education Workers, from each of the two villages. A short term training programme (4 days) was organized for the volunteers. The aim of the training was to help the rural volunteers with state-of-the-art knowledge on the adolescents' issues and problems, adolescents' reproductive health issues and the techniques of skill development needed for acting as active mediators. Total fourteen sessions were conducted in the training programme.

**Strategies Followed During Intervention:** A team of seventeen members carried out the intervention programmes in the villages. The team consisted a Project Fellow, one Continuing Education Worker, and a team leader with her team members (village counsellors 14+1). The entire team was engaged in the implementation of intervention programmes in the selected villages. As mentioned earlier the target group was adolescent girls. The well trained Primary agents (Village counselors) were provided the reproductive and sexual health information, services and referrals to adolescents. In designing adolescents' programme, the research team has been guided by the life skill education approach, which takes into account these multi-dimensional needs of the adolescents. Education on sexuality and reproduction was a part of the life-skill training and the programmes focusing exclusively on

adolescent sexuality, reproduction, STIs/RTIs and HIV/AIDS. The campaign also focused on the body changes, puberty, menstruation, secondary sex characteristics, masturbation, night emissions, sexual intercourse, etc. They were also engaged in educating the adolescents in the areas of assertiveness, decision-making and negotiation skills, value clarification, and inter-personal communication through various workshops conducted at the village itself.

**The Activities of the Team Include:** The foremost step for the sustainability of any programme was getting the public support and the same was mobilized by the research team at the village level. At every weekend, two-day life skills education sessions/group discussions were conducted for adolescents at the village community centre. A series of special lectures and debates were organised in the study area at regular intervals with the support of the Professors and subject experts from Raja Muthiah Medical College and Hospital (RMMC and H), Department of Population Studies and School of Management of Annamalai University to create gender and health awareness, facilitating the acquisition of knowledge, views and skills that helped adolescent girls get informed and make responsible decisions concerning their lives specifically sexual behaviours. The special lectures included topics such as physical, and emotional changes during adolescence, menstrual problems faced by adolescents and the means to overcome the problems, and assertiveness and being assertive in all kinds of relationships, HIV/AIDS and RTI/STI etc.

Two gynecological health camps for adolescent girls were conducted with the support of gynecological Doctors and Para-Medical personnel from RMMC and H, at villages. Massive responses was witnessed among the adolescent girls at the villages. About 70-90 adolescent girls were benefited. In these camps, the doctors gave advice on RH matters, more about menstrual cleanliness and sexuality issues and problems and told about the means to conquer the problems. During this camp, the cloth users (for preventing the blood stains during menstruation) were identified and special attention was given to them on the menstrual hygiene practices. In order to get accustomed with use of napkin, the sanitary napkins were distributed free of cost in villages. Further, during these camps, counseling and tablets were provided to the needy ado-

lescents and some of them were referred to RMMC and H for further treatment. In addition, the research fellow made weekly visits to the villages for promoting learners' interest and supporting them in learning activities.

## RESULT AND DISCUSSION

**Profile of Adolescent Girls:** The percentage distribution of socio-economic and demographic (SED) characteristics of the respondents (Table 1) discloses that out of the total two hundred adolescents, two-third in the age of 17 years (66.5%), and the remaining one-third were equally distributed in the age of 18 years and 19 years (17.0% and 16.5% respectively). The median age of the respondents was 17.6 years. Further, it reveals from the table that an overwhelming percent of the adolescents were Hindus (93.0%) and very negligible proportions fall in Christian (5.0%) and Muslim (2.0%) religion. Little above half of the respondents (51.0%) fall in Most Backward Class and nearly forty percent of the respondents belonged to SC (39.0%). OBC occupied just nine percent of the total population in the study area and only one percent of the respondents belonged to Forward Caste.

It was observed from the SED table that little less than three-fourth of the adolescents (74.0%) were in the nuclear system and the remaining twenty-six percent in joint family systems. This may be due to the wake of new socio-economic progress taken place in the study area. An overwhelming percent of the adolescents completed their secondary and above education (96.0%). It can be inferred from the table that though the adolescents were in the rural settings, they attained the substantial level of education. With regard to parents' educational status, little less than one-third of the respondents' fathers (32.0%) and more than half of their mothers (54.0%) were illiterate. In case of parents' occupation, little less than three-fourth of the fathers were engaged in agriculture sectors (71.5%) and more or less equal proportions of their fathers worked in either private or public sector (12.0% each). On the other hand, a vast majority of the respondents' mothers were engaged in household activities (94.0%).

### Evaluation of Intervention Programmes

After successful completion of six months intensive intervention programmes, the research

**Table 1: Respondents by personal characteristics**

<i>SED characteristics</i>	<i>Percentage</i>	<i>Number</i>
<i>Age Group</i>		
17	66.5	133
18	17.0	34
19	16.5	33
<i>Religion</i>		
Hindu	93.0	186
Muslim	2.0	4
Christian	5.0	10
<i>Caste</i>		
Forward caste	1.0	2
Other backward caste	9.0	18
Most backward caste	51.0	102
Scheduled caste	39.0	78
<i>Family System</i>		
Nuclear	74.0	148
Joint	26.0	52
<i>Educational Status</i>		
No schooling	1.0	2
Primary completed	3.0	6
Secondary completed	65.0	130
Higher secondary completed	30.0	60
<i>Fathers' Educational Status</i>		
No schooling	32.0	64
Primary completed (1-5)	37.5	75
Secondary completed (6-10)	22.5	45
Higher secondary completed	4.0	8
Diploma/Graduation	4.0	8
<i>Fathers' Occupation</i>		
Farmer	71.5	143
Government sector employee	12.0	24
Private sector employee	12.5	25
Business	4.0	8
<i>Mothers' Educational Status</i>		
No schooling	54.0	108
Primary completed	24.5	49
Secondary completed	18.5	37
Higher secondary completed	3.0	6
Diploma/Graduation	-	-
<i>Mothers' Occupation</i>		
House wife	94.0	188
Government sector employee	0.5	1
Private sector employee	1.0	2
Own business	4.5	9

team planned to evaluate the impact of programmes at study area. One-fifth of the total adolescent students were taken as sample population for this end line survey, the sample size was 120.

The post intervention data showed that the respondents' socio-economic and demographic characteristics were almost identical with base line survey data. The quantitative evaluation of life skills programmes shows that these programs have changed the adolescent girls' perception, attitude and behaviour on puberty and menstrual issues. It increased their knowledge on reproductive health and understanding on HIV/AIDS. Further, it also improved their parental relations,

skills, and self-confidence on various issues. The programmes led to a significant increase in the percent of girls with knowledge of puberty at the study locations (Table 2). Only thirty-six percent of the adolescents girls believed that 'a woman can experience pregnancy soon after having sexual relationship with a man' at end line compared to 86 percent at baseline survey. At end line survey, more than half of the girls (55%) understood 'ovum is usually released around 14th day from menstruation' compared to only 29 percent at baseline survey.

The debates and discussions in the study area led to an increased openness on menstrual topics (Table 3). The pre and post intervention data showed that adolescent respondents' view on menstruation (menstruation is a common process for a girl) increased to two-fold after received the education (from 19.5 to 41%). Likewise, intervention included increased knowledge about menstrual bleeding, more than one-third of the girls (34.2%) understood that menstrual bleeding flows from uterus at end line survey compared to only 19 percent at baseline survey. The programmes also deeply influenced their menstrual hygienic practices. The data showed that a significant positive shift in all aspects with particular improvement in the areas of menstrual cleanliness. The percentage of girls using soap to wash the secret parts during menstruation increased from 26.5 percent to 71.7 percent. Further, their habit of taking bath during periods also changed optimistically after the intervention programmes. Roughly about 9 times an in-

crease was witnessed in the study area. These programmes helped foster awareness and positive change on the perception and practice of sanitary napkin/cloth to prevent the bloodstains during menses.

When it comes to evaluation of the practices of preventing blood strains, only a moderate change was noticed among the pad users - from 34.5 percent at baseline to 41.7 percent at end line (Table 4). More than half of the girls continued to use cloths (58.3 percent). However, their cloth changing pattern was changed after the intervention programmes. Before the training programme only nine percent of them changed the cloths whenever they soaked, this proportion was increased five times (46%) at end line. The programs were highly effective in changing their behavior with regard to number of times reused and method of cleaning the re-use cloths among adolescent girls. Before the programme, about 75 percent of the girls reused the cloth by more than two times, however, after the intervention this habit was changed and only 15 percent were reusing the cloth for more than two times.

A positive impact was observed on the awareness about RH in the study area (Table 5). The pre and post intervention data showed that adolescent girls' RH knowledge increased about 20 points. Further, the proportion of understanding about pregnancy, with respect to knowledge on the chance of women become pregnant enhanced considerably. This knowledge was increased five and half times (13 to 57%).

The evaluations of the intervention progra-

**Table 2: Adolescents by knowledge on puberty**

<i>Knowledge on puberty</i>	<i>Percentage of adolescents</i>	
	<i>Pre</i>	<i>Post</i>
	<i>Intervention</i>	
<i>If a girl dose not attain puberty at the age 14, she may be having biological problems</i>		
True	68.0	72.5
False	32.0	27.5
<i>The excessive bleeding during menstruation is an indication of poor reproductive health of a woman</i>		
True	55.5	69.2
False	44.5	30.8
<i>The ovum is usually released around 14th day from menstruation</i>		
True	29.0	55.0
False	71.0	45.0
<i>A woman can experience pregnancy soon after having sexual relationship with a man</i>		
True	86.0	35.8
False	14.0	64.2
<i>Puberty start between 10-15 years in boys</i>		
True	29.0	26.7
False	71.0	73.3

**Table 3: Adolescents by knowledge on menstruation**

Knowledge on menstruation	Percentage of adolescents	
	Pre	Post
	<i>Intervention</i>	
<i>Views on Menstruation</i>		
Common process	19.5	40.8
Diseases	10.5	2.5
Curse of God	23.5	9.2
No idea	46.5	47.5
Uterus	19.0	34.2
Vagina	25.0	13.3
Intestine	-	-
No idea	56.0	52.5
<i>Knowledge on Age at Start Menstruation</i>		
11-13	26.0	49.2
14-15	73.5	39.2
Above 15	0.5	11.7
<i>Knowledge on Length of Menstruation Cycle</i>		
Up to 25 days	15.5	9.2
25-28 days	34.0	65.8
29-30 days	33.5	25.0
Above 30 days	17.0	-
<i>Knowledge on Duration of Menstrual Cycle</i>		
3 days	13.5	10.8
4 days	41.0	62.5
5 days	30.5	20.0
>5 days	15.0	6.7
<i>Knowledge on Menstrual Hygiene</i>		
Yes, it is most important	71.5	82.5
No idea	28.5	17.5
<i>Hygienic Measures Usually Taken During Menstruation Period (Wash the Secret Parts)</i>		
Clean with medicated water	5.5	6.77
Clean with soap	26.5	1.7
Clean with water alone	68.0	21.7
<i>Action Taken When Feel Discomfort During Periods</i>		
Wash whenever feel discomfort	23.0	47.5
Wash after every urination	15.5	25.8
Wash morning and night	34.5	13.3
Wash only when taking bath	27.0	13.3
<i>No. of Times Take Bathing During Menstruation</i>		
Once	91.5	46.7
Twice	5.5	43.3
Whenever feel	3.0	10.0

mme established the fact that the significant change was noticed about knowledge on safe abortion period (Table 6). More than sixty percent of the girls (63.4 percent) understood 'less than ninety days is safe period to abort a pregnancy' at endpoint compared to only 40 percent at baseline survey. The evaluations of the programmes found that a reasonable change was observed in the familiarity about pregnancy terminating pills among the adolescents. The post in-

**Table 4: Adolescents by practices on preventing bloodstains**

Practices on preventing bloodstains	Percentage of adolescents	
	Pre	Post
<i>Currently Practicing of Pads</i>		
Yes	36.5	50.5
No	63.5	49.5
<i>How Often You Changed the Pads</i>		
Whenever it soaked	1.4	6.0
After urination and defecation	31.5	-
Early in the morning and before going to bed	37.0	68.0
Once in a day	30.1	26.0
<i>Reuse of Pad Next Cycle</i>		
Yes	11.0	62.0
No	89.0	38.0
<i>No. of Times Reusing</i>		
Two times	87.5	83.9
More than two times	12.5	16.1
<i>Currently Practicing of Cloths</i>		
Yes	63.5	58.3
No	34.5	41.7
<i>How Often You Changed the Cloths</i>		
Whenever it soaked	8.7	45.7
After urination and defecation	7.1	20.0
Early in the morning and before going to bed once in a day	24.4	15.7
59.8	18.6	
<i>Reuse of Cloths Next Cycle</i>		
Yes	77.2	87.1
No	22.8	12.9
<i>No. of Times Reusing</i>		
Two times	23.5	86.2
More than two times	76.5	14.8
<i>Method of Cleaning the Re-use Cloth</i>		
Wash with water and dried	38.8	4.9
Wash with water and dried in sunlight	36.7	50.8
Wash with soap water and dried in sunlight	16.3	44.3
Wash with hot water	8.2	-

tervention analysis reveals that about seventeen point increase was noticed among the respondents (from 39% at baseline to 56% at end line).

The six months intervention package led to a significant increase in the percent of girls with knowledge of Copper T and Pills. At base line survey, forty percent of the adolescents knew about Copper T and these proportions increased to 74 percent at end line survey. The messages which given at interventions effectively resulted in increased understanding of all modern contraceptive methods. The pre and post intervention data demonstrated that adolescent's female condom knowledge increased by two times among (6.0 to 13.3%) adolescents. After receiving the training education, an average of 30 points was increased on knowledge of EC pills among girls.

The end line survey data showed improved

**Table 5: Adolescents by knowledge on reproductive health**

<i>Reproductive health knowledge</i>	<i>Percentage of adolescents</i>	
	<i>Pre</i>	<i>Post</i>
<i>Knowledge about Reproductive Health</i>		
Yes	24.0	43.3
No	76.0	56.7
<i>Knowledge on Components of RH (multiple responses)</i>		
ANC	06.3	23.1
FP	50.0	73.1
Abortion	62.5	28.8
Safe motherhood	37.5	55.8
<i>Knowledge about Pregnancy</i>		
Yes	70.0	69.2
No	30.0	30.8
<i>Chance of Woman Become Pregnant</i>		
First 10 days after menstruation	18.6	19.3
Middle 10 days after menstruation	12.9	56.7
Last 10 days after menstruation	2.1	16.7
Don't know	66.4	7.3
<i>Symptoms of Pregnancy (Vomiting, Giddiness, and Stop the Menstruation)</i>		
Yes	56.4	80.7
No	4.3	19.3
Don't know	39.3	-
<i>Sources of Knowledge on Pregnancy (Multiple Responses)</i>		
Female friends	57.9	81.9
Male friends	0.7	-
Parents	8.6	13.2
Radio/TV	78.6	83.1
Internet	-	-
Magazines and Newspaper	2.9	-
Health care provider	37.9	37.3

knowledge on RTIs, when compared to base line data (Table 7). Adolescents' familiarity with RTIs increased approximately double time (from 18 to 35%). Further, a significant positive shift was evidenced with regard to their knowledge on RTIs curability – six times enhanced (5.6 to 31.0%) after the programmes. At the base line survey, only a modest proportion of adolescents (14%) indicated that RTI was a preventable disease. However, this proportion was increased to more than seventy percent at end line survey.

The results of the impact evaluation indicated evidence of a significant positive effect on HIV/AIDS knowledge, attitudes, and behavior. A change was observed among girls with regard to knowledge on mode of HIV transmission. 'Unprotected sexual intercourse is one of the most common means of HIV transmission'. This was agreed by one-third of the respondents (34.3%) at the base-line survey. After the programmes this proportion was increased to 62 percent. The

**Table 6: Adolescents by knowledge on abortion and related issues**

<i>Knowledge on abortion and related issues</i>	<i>Percentage of adolescents</i>	
	<i>Pre</i>	<i>Post</i>
<i>Aware about the Unwanted Pregnancy</i>		
Yes	55.0	59.2
No	45.0	40.8
<i>Safe Abortion Period</i>		
<90 days	40.9	63.4
90-120days	15.5	15.5
120-150days	8.2	-
No idea	35.5	15.5
<i>Right Person to Perform Abortion</i>		
Doctor	67.3	71.8
Para-medical person	27.3	28.2
Trained Dai	5.4	-
<i>Safe Place to Perform Abortion</i>		
Home	3.6	12.7
Public sector	30.9	16.9
Private sector	65.5	70.4
<i>Aborting Pregnancy of a Married Woman is a Legalized Measure</i>		
True	44.5	46.5
False	55.5	53.5
<i>Aborting Pregnancy of a Unmarried Woman is a Legalized Measure</i>		
True	36.4	47.9
False	63.6	52.1
<i>If Her Pregnancy is More Than 3 Months, Abortion Would be More Unsafe</i>		
True	62.7	59.2
False	37.3	40.8
<i>There are Family planning methods by which Pregnancy can be avoided</i>		
True	70.9	71.8
False	29.1	28.2
<i>Pills are Available to Terminate A Pregnancy</i>		
True	39.1	56.3
False	60.9	43.7

knowledge on chance of transferring HIV from 'mother to child' and 'blood transfusion' was not popular even after the intervention programmes. At the same time, around one-third of the adolescents strongly believed that 'HIV is a curable disease'; however, the programmes did not made any change among adolescents with regard to knowledge on HIV curability. However, a significant impact on the awareness about ART was observed. The pre and post data showed that adolescent girls' understanding on ART increased from 18 percent to 25 percent. The pre and post intervention data confirmed that an improvement was seen among adolescents with regard to understanding on HIV misconception. 'Using condom for every sexual act will reduce the chance of getting AIDS' this statement was approved by just above half of the respondents before the

**Table 7: Adolescents by knowledge on reproductive tract infection**

<i>Knowledge about reproductive tract infection</i>	<i>Percentage of adolescents</i>	
	<i>Pre</i>	<i>Post</i>
<i>Ever Heard an Illness Called RTI</i>		
Yes	18.0	35.0
No	82.0	65.0
<i>Source of Information (Multiple Responses)</i>		
Female friends	83.3	73.8
Male friends	-	-
Parents	5.6	28.6
Radio/TV	36.1	9.5
Internet	-	-
Magazines/news paper	-	-
Health care provider	47.2	92.8
<i>Reason for RTI (Lack of personal Hygiene)</i>		
Yes	13.9	52.3
No	86.1	-
Don't know	16.7	31.0
<i>RTI is a Curable Disease</i>		
Yes	5.6	31.0
No	94.4	69.0
<i>RTI is a Preventable Disease</i>		
Yes	13.9	73.8
No	86.1	26.2
<i>Symptoms of RTI (After Probing, Multiple Responses)</i>		
Lower abdominal pain	83.3	76.2
Vaginal discharge with or without fever	30.6	66.7
Vaginal discharge with or without itching or irritation	52.8	73.8
Foul odor discharge	25.0	45.2
Pain or burning sensation while urinating	86.1	88.0
Frequent urination with above symptoms	27.8	21.4
Back pain or fever	33.3	26.2
Itching	61.6	45.2
<i>Past 3 Months Ever Suffered RTI Problems</i>		
Yes	13.0	21.7
No	87.0	78.3
<i>Consulted for Treatment for RTI</i>		
Yes	19.2	50.0
No	80.8	50.0
<i>If Yes Whom Did You Consulted</i>		
Govt. Sector	60.0	76.9
Private Sector	40.0	23.1

intervention programs. However, this was increased to 81 percent at end point survey.

The programmes helped to change their mindset on HIV spread through mosquito bite – more than one-fourth of the girls had the misconception that HIV spread through mosquito bite at baseline survey. The post survey data showed a declined pattern. A significant descending change was noticed among the adolescents after intervention programmes with respect to their misconception on HIV spread. At the

baseline survey more than forty- five percent of the adolescents believed that sharing utensils of someone who has AIDS will spread the HIV, this proportion was reduced to about fourteen percent after the intervention programmes. The adolescents' perception towards HIV test before marriage enhanced. Intervention included increased attitude towards HIV test, from 71 percent at base line to 95 percent at end line.

The end line survey data showed improved adolescent sexual health knowledge (Table 8). The adolescent girl's opinion on 'having extra marital life for men' decreased more than 30 percent after received the education. On the other hand, no one accepted the opinion of women having extra marital life.

The impact evaluation indicated an evidence of significant positive effect on understanding of Family Life or Sex Education (Table 9). A major change was witnessed among girls with regard to familiarity on family life education. The pre intervention data showed only 16 percent of the respondents knew about family life education, and this proportion increased to about three and half times (57%) at end line survey. The pre and post intervention data established the fact that the respondents' opinion about teaching of Sex or Family Life education at school increased by 17 points (48.5 to 65.0%). A greater part of the adolescents indicated 14-15 years was the suitable age to tough the family life education. The respondents referred educator as the right person to tough the family life education, and next highest proportion favored the health providers. The evaluations of the programmes established that a reasonable change was observed with regard to parental relationship. The girls' friendly interaction with their mothers was enhanced ten points after the intervention programmes. The girls' attitude towards discussion about their body change with mothers was enhanced from 47.5 percent to 67.5 percent. The proportion of girls who had voluntary discussion with their mothers was increased around 26 points. With regard to menstrual discussion with their mothers, a marginal increase was witnessed (65.5 to 80%).

## CONCLUSION

It can be concluded from the above analysis that the quantitative evaluation of life skills



**Table 8: Adolescents by knowledge on sexuality and sexual related issues**

<i>Sexuality and sexual related issues</i>	<i>Percentage of adolescents</i>	
	<i>Pre</i>	<i>Post</i>
<i>Kissing Each Other (Boys And Girls) Before Marriage is Acceptable</i>		
Yes	16.0	13.3
No	69.5	70.5
Don't know	6.5	11.5
<i>Boys Pre-marital Sexual Activities is Natural</i>		
Yes	7.5	3.3
No	84.5	89.2
Don't know	8.0	7.5
<i>Girls Pre-marital Sex is Natural</i>		
Yes	0.5	-
No	91.0	91.7
Don't know	8.5	8.3
<i>It is Acceptable for a Man to have an Extra-marital Sexual Relationship</i>		
Yes	73.3	13.3
No	8.3	68.3
Don't know	8.3	18.3
<i>It is acceptable for a woman to have an extra-marital sexual relationship</i>		
Yes	0.5	-
No	91.5	90.0
Don't know	8.0	10.0

programmes shows that these programs have changed the adolescent girls' perception, attitude and behaviour on puberty and menstrual issues. A significant positive shift in all aspects with particular improvement in the areas of menstrual cleanliness increased their knowledge on reproductive health and understanding on HIV/AIDS. Further, it also improved their parental relations, skills, and self confidence on various issues. The impact evaluation indicated an evidence of significant positive effect on understanding of Family Life or Sex Education. The evaluations of the programmes established that a reasonable change was observed with regard to parental relationship

### RECOMMENDATIONS

Adolescent health services were inadequate and available services were not being delivered in an acceptable manner. Hence, this study recommended establishing Health Promoting Centers at school level and those centers should be accessible, equitable, acceptable, appropriate, comprehensive, effective and efficient.

In each school the teachers who are respon-

**Table 9: Adolescents by attitude towards family life education**

<i>Attitude towards family life education of adolescents</i>	<i>Percentage</i>	
	<i>Pre</i>	<i>Post</i>
<i>Ever Heard Family Life Education</i>		
Yes	16.5	56.7
No	83.5	43.3
<i>If Yes Sources Of Information (Multiple Responses)</i>		
School/campus	18.2	17.6
NGO/ Govt. program	33.3	82.3
TV/Radio/Paper	48.5	16.1
<i>Opinion About Teaching Of Sex Or Family Life Education</i>		
Favour	48.5	65.0
Not Favour	39.5	25.0
No idea	12.0	10.0
<i>Right Age for Family Life Education</i>		
10-13	5.8	2.5
14-15	14.0	80.0
16-17	59.5	10.0
18+	20.7	6.7
<i>Appropriate Person to Give Such Education (Multiple Responses)</i>		
Parents	9.9	10.0
Educators	85.9	80.0
Friends	12.4	13.3
Youth club members	65.3	17.5
Health care providers	49.6	49.2
<i>Parental Relationship</i>		
<i>Interaction with You and Your Mother</i>		
Very friendly	8.0	8.3
Friendly	44.0	54.2
Not bad	9.5	26.7
Poor	29.0	10.0
Very poor	9.5	-
<i>Interaction with Your Father</i>		
Very friendly	3.0	2.5
Friendly	32.0	33.3
Not bad	11.5	11.7
Poor	38.5	41.7
Very poor	15.0	10.8
<i>Discuss with Girls Body Change - Mother</i>		
Yes	47.5	67.5
No	52.5	32.5
<i>Discuss with Mother About Your Menstruation</i>		
Yes	65.5	80.0
No	34.5	20.0

sible for NSS, Scout, CSS, Junior Red Cross NCC and Sports Club and Cultural Club should be specially trained with counseling techniques on ARSH issues. It should be made an integral part of the NSS, Scout, CSS Junior Red Cross NCC and sports activities. A holistic approach should be adopted which should focus on a broader range of health issues and not just sexual and reproductive health. It is to be believed that school based services would better be utilized than health facility based services. Involving Teach-

ers – Parents association will enhance the effectiveness of programs.

Health Promoting Centres should provide the following package of services

- Management of behavioral problems.
- Offer information and counseling on developmental changes, personal care and ways of seeking help.
- Nutritional and reproductive health counseling.
- Reproductive and sexual health services to adolescent including RTI treatment, contraceptives etc.
- Voluntary counseling and testing for HIV.
- Mental health services including management of substance abuse.

Similarly, for the out of school adolescents, efforts should be taken to establish a separate counseling centre at PHC/SHC level, as integral part of the RCH programme. Proper training of health care providers on Health Promoting Centres should be essential. It does not mean to create a new centre, it mean adding this service once in a week and ensuring that adolescent clients have privacy. Village health nurse should be involved in these activities and make sure that they have the most current and accurate information on ARSH (Adolescent Reproductive and Sexual Health).

Beside the above recommendations

- Steps should be taken to incorporate the ARSH information with youth development programmes as well, in all the existing health and population welfare programmes and service facilities in the public sector.
- All Self Help Groups should be trained in the production of low-priced sanitary napkin and the government should encourage and be liberal in sanctioning the financial support to this sanitary napkin cottage industries.
- Efforts should be taken to educate adolescent reproductive and sexual health (ARSH) issues and problems at family level for the out of school adolescents. Further, members of the family should strive to create a safe and supportive climate that nurtures girls and encourages them to develop and pursue their goals.
- The mothers of these girls were lacking in right knowledge and the same thing was transferred to their off-springs. Before bring-

ing any change in menstrual practices, they should be educated about the facts of menstruation and its physiological implications.

- NGOs and health providers need to be involved in improving the rural adolescents' self-confidence self esteem and their parental relationships.
- Electronic media is the most effective source of information for RH and family planning issues. Television was the most commonly mentioned source of information; therefore more emphasis needs to be given to this medium.

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