EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES
http://www.ejbps.com

ISSN 2349-8870
Volume: 6
Issue: 8
278-287
Year: 2019

REPRODUCTIVE HEALTH BEHAVIOR OF ADOLESCENT STUDENTS AND THEIR PERCEPTIONS REGARDING SEXUAL HEALTH EDUCATION

Dinesh Kumar*[1], Naveen K. Goel[1] and Arjun Mehra[2]

[1]Department of Community Medicine, Government Medical College and Hospital, Chandigarh.
[2]University of Waterloo, Ontario, Canada.

***Corresponding Author: Dr. Dinesh Kumar**
Department of Community Medicine, Government Medical College and Hospital, Chandigarh.

Article Received on 03/06/2019 **Article Revised on 23/06/2019** **Article Accepted on 13/07/2019**

ABSTRACT

Background: Reproductive behaviour of adolescents is a potential determining factor for future population growth in a country. However, their reproductive and sexual health needs have so far been neglected. **Objectives:** to assess the reproductive behaviour of adolescent students in Chandigarh and their perceptions regarding reproductive health /family life education needs. **Methods:** Cross sectional survey conducted among 1819 adolescent students under Indian Council of Medical Research (ICMR), India sponsored project **"Natural Mentoring and Its Impact on Health Conditions Of Adolescents".** Information was collected on socio-demographic characteristics and reproductive health behavior, sexual aspects of health, involvement in sexual activities, awareness regarding sexually transmitted **in**fections, HIV/AIDS and other reproductive health issues. Information was collected by conducting personal interviews in privacy. **Results:** Among all 1819 students including 1039 boys and 780 girls, 415 (22.8%) respondents had intimate friends. Discussions regarding reproductive health related issues including sex related material (83.0%), contraceptives (69.6%), body development (51.5%), sexual abuse (67.2%), sexual intercourse (65.1%), teenage pregnancy (61.7%), emergency contraceptives (52.3%), pre marital sex (46.6%), and night fall / wet dreams (18.5%) were reported. Among 655 girls who attained menarche 423(64.6%) reported to have some menstrual complaints sometimes. Contraceptive awareness was found to be significantly associated with gender (P=0.02) and girls were more aware of contraceptives (86.3%) as compared to boys (81.8%). Awareness of emergency contraceptives (EC) was found among 62.1% boys and 57.2% girls. Overall use of contraceptives mainly emergency contraceptive was reported by 5.1% respondents only whereas indulgence in sexual intercourse was reported by 6.7% adolescent students including 8.9% boys and 3.7% girls indicating unsafe sexual practices prevailing among surveyed respondents. Boys were more likely to have opinion of frank and open discussion about sex. There were 49.5% respondents who were of the opinion that discussion of sex should be confidential whereas 37.3% were of the opinion that it should be frank and open. There were 1521(83.6%) respondents who reportedly had knowledge about STI infections and 524(28.8%) had worries regarding sex. Girls were having more sex related worries (32.8%) as compared to boys (25.9%) and difference between two proportions being highly significant (P=0.005). Felt need of sex education was found among 1334(73.3%) students. Girls felt significantly higher degree of felt need of sex education (P<0.001). Most preferred place to impart sexual education was schools reported by 921(50.6%) students mostly to be imparted by medical doctors. **Conclusions and Suggestions:** Adolescents were found to be facing several reproductive and sexual health issues. There is felt need of Sexual Health Education (SHE)/ Family Life Education (FLE) to be imparted at school levels for improving their reproductive health. Addressing their reproductive health needs through school based sexual health education may provide health benefits in terms of delaying age at marriage, reducing incidence of teenage pregnancy, and reduction in unsafe sexual and other risky behaviors of adolescents.

KEYWORDS: Adolescence, Emergency Contraceptives (EC), Family Life Education (FLE), Sexual Health Education (SHE)**,** Sexual Behavior, Teenage pregnancy, Reproductive Tract Infections (RTIs).

INTRODUCTION

Adolescents are prone to various reproductive health problems. Their problems are likely to be influenced by rapidly changing life style, increasing stressful conditions continuously faced by them and absence of proper guidance and counseling. Future population growth in a country is largely dependent on reproductive behaviour of adolescents. In spite of this fact, reproductive health needs of adolescents have not yet received proper attention in our country. A number of

studies conducted in different parts of the country show that sexual behavior among unmarried adolescents is on the rise.[1-5] NFHS-3 findings reported 16% prevalence of teenage pregnancy in India.[6] Whereas, according to NFHS-4 data, 8 percent of women age 15-19 have begun childbearing, three percent of young women and 1 percent of young men aged 15-24 years reported having sex before the age of 15 in India.[7] The prevalence of sexual activity was found to be 20% (28. 5% among males and 18.8% among females) and sexual intercourse was reported to be 4% among males and 1% among females in a study conducted among 11Th class students of Chandigarh.[8] Our recent study conducted in Chandigarh and Himachal Pradesh, India reported 31% adolescents having intimate friends.[9] Studies indicate that while adolescents' attitude towards premarital sex is becoming more liberal, their awareness of contraceptives remains poor.[10] The main barrier for the adolescents is the unavailability of reproductive health (RH) services.[11] Reports indicate that demand for sexual and reproductive health services by adolescents is increasing in developing countries.[12,13,14] Chandigarh is a highly urbanized city and western culture is adopted by a large proportion of respondents in this modern city called "City Beautiful of India". There is lack of community based studies on reproductive health needs of adolescents and more so in a modernized city 'Chandigarh'. Reproductive health status of adolescents and youths in Chandigarh is expected to be influenced by rapidly changing life style adopted by adolescents. Present study is an attempt to assess the reproductive behaviour of adolescent students in Chandigarh and their perceptions regarding reproductive health /family life needs.

MATERIAL AND METHODS

Profile of Study Population

Present study has been conducted in Government and private schools of Chandigarh as a part of a detailed survey under project sponsored by ICMR. Chandigarh is the most economically advanced Union Territory (UT) of India and also capital of two states: Punjab and Haryana. It is characterized by high population growth due to increasing migratory population and rapidly changing life style. According to Census (2011), total population of Chandigarh is 1055450 including 580663 males and 474787 females. The population growth rate of Chandigarh is reported to be 17.19%. Other demographic characteristics like sex ratio (F:M) 818: 1000, child sex ratio 880:1000, literacy rate 86.05% with male literacy 89.9% and female literacy 64.8% are also reported. There are more than 250 schools and colleges in UT Chandigarh. There are 190 schools including 106 Government, 7 Government aided, 6 Kendriya/ Narvodaya schools and 71 Private schools imparting education up to 12th level. There are total 11,314 boys and 10,280 girls enrolled in Senior Secondary level in Chandigarh as on 30th September 2012.

Sampling Design

A stratified multistage random sampling was adopted. Stratification was done on the basis of type of schools imparting education up to 12th standard. There were two strata, consisting of Government and Private schools of UT Chandigarh. Within each stratum, list of schools imparting education in Hindi, English, and Punjabi mediums will be prepared along with their respective sanctioned strength of students studying in classes 9th standard and above. Sampling frame of sampling units at each stage of selection was prepared. At the first stage of selection, a sample of 12 schools including 8 Government and 4 Private schools were selected at random as first stage units with proportional allocation. Within each selected first stage unit, a second stage sample of students of different classes of an optimum size with proportional allocation was selected as study units.

Study-Design

This paper is based on a part of a detailed findings of detailed longitudinal survey conducted under Indian Council of Medical Research (ICMR) sponsored project "**Natural Mentoring and its Impact on Health Conditions of Adolescents".** Present findings are based on cross sectional survey conducted to investigate reproductive health related issues among adolescents who were willing to participate in selected schools. Information was collected on socio-demographic characteristics and reproductive health behavior, sexual aspects of health, involvement in sexual activities, awareness regarding sexually transmitted **in**fections, HIV/AIDS and other reproductive health issues. Information was collected by conducting personal interviews in privacy.

Inclusion Criterion

Only respondents who were willing to participate in the study were included in the study. Adolescent students were included provided they satisfy following criterion apart from their willingness to take part in the study.

1. They are within the age group of 14-19 years.
2. They are studying presently in classes above 8th standard.
3. They are unmarried.

Exclusion criteria

Individuals were excluded depending upon following criteria 1) Married individuals 2) Not attending schools 3) Suffering from any major physical/ mental disorder and without a reliable respondent 4) One who was not willing to participate in the study.

Optimum Sample Size

Power analysis was done to calculate optimum sample size for the proposed study. Sample size was calculated by using the following formula with approximation for large population:

$$n_{opt.} = \frac{Z^2_{1-\alpha/2}\,(1-P)}{\epsilon^2\,P},$$

Where,
P = Anticipated population proportion
1 - α = Confidence Coefficient
∈ = Relative precision, and
Z (.) is the value of standard normal variate.

Optimum sample size in the project was calculated on the basis of 40% percentage of adolescents having natural mentoring relationships as the most important outcome parameter anticipated on the basis of preliminary survey findings and assuming 90% confidence coefficient and 5% relative precision. Optimum sample size was corrected /adjusted for design effect due to selection of clusters keeping in view an approximate 20% population of adolescents and young youths in the studied population of Chandigarh. The optimum sample size comes out to be 1624 study subjects. Elevating further the sample size for non respondents, sample included 1819 study subjects finally.

(i) Ethical Issues

Ethical Guidelines of ICMR (2006) on human participants were followed.[15] Consents of respondents for participation in the study were taken and confidentiality of responses was ensured. In case of adolescents below 18 years of age, consent was taken from parents and teachers also. In the data collection process, steps were taken to ensure privacy of participants, confidentiality of answers and freedom to respond truthfully. Prior approval from Institutional Ethics Committee (IEC) was taken.

RESULTS

Table 1 provides detailed results pertaining to reproductive health related issues of adolescent boys and girls studied. There were total 1819 students including 1039 boys and 780 girls. Among all 1819 respondents, 1170 (64.3%) were aware of legal age of marriage for boys and 1432 (78.8%) respondents were aware of the legal age of marriage for girls. There were 900(49.5%) students having told desired age at marriage for boys to be between 19-21 years. Attraction towards opposite sex was felt sometimes by 56.3% boys and 52.1% girls and there were 415 (22.8%) respondents who had intimate friends. Boys were more likely to have feeling of attraction towards opposite gender and the association between feeling of attraction and gender was found highly significant (P<0.001). Also, boys were more likely to have intimate friends as compared to girls, having significant association (P=0.03). About 72% respondents were having even more than 20 friends representing almost equal distribution among boys and girls. Among all 1510(83.0%) respondents surveyed had discussions regarding : sex related material, 1266(69.6%) contraceptives, 1222(67.2%) sexual abuse, 1184(65.1%) sexual intercourse, 1122(61.7%) teenage pregnancy, 951(52.3) emergency contraceptives, 847(46.6%) pre marital sex and 337(18.5%) night fall / wet dreams respondents.

Awareness regarding contraceptive was found among 1523(83.7%) respondents including 850 (81.8%) boys and 673(86.3%) girls as shown in Table-2. Contraceptive awareness was found to be significantly associated with gender (P=0.02) and girls were more aware of contraceptives (86.3%) as compared to boys (81.8%). Maximum awareness was found of condom reported by 1389(91.2%) respondents. When asked about sexual intercourse, 121 (6.7%) reported indulging in the sexual act sometimes. There were 1091(60.0%) respondents who were aware of emergency contraceptives (EC). Among 1091 respondents who were aware of EC, 845(77.5%) reported i-Pills to be EC. The knowledge regarding emergency contraception (EC) was comparatively more among boys (62.1%) as compared to that of girls (57.2%). Use of emergency contraceptive was reported by 56(5.1%) respondents. Among 655 girls who attained menarche 423(64.6%) reported to have some menstrual complaints sometimes.

Table 1: Reproductive Health Related Information.

Reproductive Health Related Information	Male (N=1039)		Female (N=780)		Total (N=1819)	
Awareness of legal age at marriage						
For Boys						
No response	40	3.8	26	3.3	66	3.6
Below 20	134	12.9	93	11.9	227	12.5
21	611	58.8	559	71.7	1170	64.3
22-25	226	21.8	90	11.5	316	17.4
26 and above	28	2.7	12	1.5	40	2.2
					X^2=63.3	P<0.001
For Girls						
No response	40	3.8	26	3.3	66	3.6
Below 18	8	0.8	4	0.5	12	0.7
18	773	74.4	659	84.5	1432	78.7
19-25	142	13.7	53	6.8	195	10.7

26 and above	76	7.3	38	4.9	114	6.3
					X^2= 30.9	P<0.001
Desired age at marriage						
For Boys						
No response	46	4.4	29	3.7	75	4.1
Below 18	100	9.6	37	4.7	137	7.5
18	149	14.3	77	9.9	226	12.4
19-21	553	53.2	347	44.5	900	49.5
22-25	191	18.4	290	37.2	481	26.4
					X^2=92.4	P<0.001
For Girls						
No response	43	4.1	16	2.1	59	3.2
Below 18	20	1.9	5	0.6	25	1.4
18	188	18.1	63	8.1	251	13.8
19-20	393	37.8	161	20.6	554	30.5
22-25	263	25.3	278	35.6	541	29.7
Above 25	132	12.7	257	32.9	389	21.4
					X^2=181.6	P<0.001
Attraction towards opposite gender						
Never	229	22.0	268	34.4	497	27.3
Sometimes	585	56.3	406	52.1	991	54.5
Often	134	12.9	45	5.8	179	9.8
Not sure	59	5.7	36	4.6	95	5.2
No response	32	3.1	25	3.2	57	3.1
					X^2=50.2	P<0.001
Have intimate friends						
Yes	257	24.7	158	20.3	415	22.8
No	590	56.8	495	63.5	1085	59.6
No response	192	18.5	127	16.3	319	17.5
					X^2=9.1	P=0.028
Number of friends						
None	61	5.9	72	9.2	133	7.3
1	123	11.8	105	13.5	228	12.5
2-3	56	5.4	25	3.2	81	4.5
4-5	24	2.3	7	0.9	31	1.7
6-10	25	2.4	3	0.4	28	1.5
11-20	8	0.8	3	0.4	11	0.6
More than 20	742	71.4	565	72.4	1307	71.9
Discussion regarding RH issues						
Sex related materials	836	80.5	674	86.4	1510	83.0
Sexual intercourse	664	63.9	520	66.7	1184	65.1
Sexual abuse	622	59.9	600	76.9	1222	67.2
Teenage pregnancy	541	52.1	581	74.5	1122	61.7
Contraceptives	711	68.4	555	71.2	1266	69.6
Body development	493	47.4	443	56.8	936	51.5
Premarital sex	402	38.7	445	57.1	847	46.6
Emergency contraceptives	566	54.5	385	49.4	951	52.3
Nightfall / Wet dreams	263	25.3	74	9.5	337	18.5

There were 1521(83.6%) respondents who had knowledge about STI infections. Diseases like HIV-AIDS among 1698(93.3%), syphilis among 261(14.3%) gonorrhea among 210 (11.5%) and leucorrhoea among 73(4.0%) heard by respondents. There were 1484(81.6%) respondents who were of the opinion that Sexually transmitted diseases spread by sexual contact followed by injection reported by 846(46.5%), kissing reported by 223(12.3%) respondents and touching by 85(4.7%) respondents. There were 1190(65.4%) respondents who reported having knowledge regarding precautions from sexually transmitted infection by using condoms, avoid sex/abstinence 804(44.2%) and stay faithful to one partner 727(40.0%) respondents. Main reasons to get infected by HIV/AIDS were due to sexual intercourse 1314(77.4%), blood transfusions 1159(68.3%), sharing needles 1097(64.6%) and mother to childhood or pregnancy or during childbirth 839(49.4%) heard by

respondents. Girls were more likely to have knowledge of STI (P<0.001). Avoidance of sex/abstinence as a preventive method of STIs was reported by 44.2% respondents.

Table 2: Reproductive Behavior of Respondents.

Reproductive Behavior	Male (N=1039)		Female (N=780)		Total (N=1819)	
Awareness of contraceptive method						
Yes	850	81.8	673	86.3	1523	83.7
No	154	14.8	82	10.5	236	13.0
No response	35	3.4	25	3.2	60	3.3
					X^2=7.5	P<0.024
Ever indulged in sexual intercourse						
Yes	92	8.9	29	3.7	121	6.7
No	940	90.5	749	96.0	1689	92.9
No response	7	0.7	2	0.3	9	0.5
					X^2=20.7	P<0.001
Aware of contraceptive methods	**N=850**		**N=673**		**N=1523**	
Condom	815	95.9	574	85.3	1389	91.2
Oral contraceptive pills	594	69.9	427	63.4	1021	73.6
Copper-T	218	25.6	198	29.4	416	30.0
Tubectomy / vasectomy	169	19.9	159	23.6	328	21.5
Any other(specify)	9	1.1	6	0.9	15	0.9
Awareness of emergency contraception (EC) N=1819						
Yes	645	62.1	446	57.2	1091	60.0
No	353	34.0	313	40.1	666	36.6
No response	41	3.9	21	2.7	62	3.4
					X^2=8.4	P=0.015
Aware of emergency contraception (EC)	**N=645**		**N=446**		**N=1091**	
I-pill	456	70.7	389	87.2	845	77.5
Unwanted-72	13	2.0	6	1.3	19	1.7
Condom	134	20.8	24	5.4	158	14.5
IUCD	7	1.1	3	0.7	10	0.9
					X^2=57.2	P<0.001
Usage of contraceptives or emergency contraceptives						
Yes	49	7.6	7	1.6	56	5.1
No	596	92.4	439	98.4	1035	94.9
					X^2=23.79	P<0.001
Knowledge of STI						
HIV/AIDS	338	32.5	343	43.9	681	37.4
Syphilis	10	0.9	5	0.6	15	0.8
Cancer	1	0.1	2	0.3	3	0.1
Gonorrhea	5	0.5	3	0.4	8	0.4
Hepatitis B/C	1	0.1	2	0.3	3	0.1
STD	1	0.1	0	0.0	1	0.05
Diseases transmitted via sexual contact						
Yes	914	87.9	607	77.8	1521	83.6
No	83	7.9	141	18.1	224	12.3
No response	42	4.0	32	4.1	74	4.1
					X^2=42.4	P<0.001
Knowledge regarding diseases						
HIV /AIDS	974	93.7	724	92.8	1698	93.3
Gonorrhea	105	10.1	105	13.5	210	11.5
Syphilis	131	12.6	130	16.7	261	14.3
Leucorrhoea	30	2.9	43	5.5	73	4.0
Any other(specify)	8	0.8	8	1.0	16	0.9
Sexual transmitted diseases spread from one person to another						
Sexual contact	878	84.5	606	77.7	1484	81.6

Injection	541	52.1	305	39.1	846	46.5
Touching	40	3.8	45	5.8	85	4.7
Kissing	132	12.7	91	11.7	223	12.3
No response	32	3.1	50	6.4	82	4.5
Preventive measures for sexually transmitted infections						
Avoid sex/abstinence	458	44.1	346	44.4	804	44.2
Stay faithful to one partner	433	41.7	294	37.7	727	40.0
Encourage partner to stay faithful	288	27.7	184	23.6	472	25.9
Use condoms	780	75.1	410	52.6	1190	65.4
Avoid commercial sex workers	319	30.7	175	22.4	494	27.2
Knowledge regarding spread of HIV / AIDS						
Sexual intercourse	771	74.2	543	69.6	1314	77.4
Unclean medical equipments	415	39.9	287	36.8	702	41.3
Sharing needles	632	60.8	465	59.6	1097	64.6
Blood transfusions	698	67.2	461	59.1	1159	68.3
Mother to' child during childhood or pregnancy or during childbirth	442	42.5	397	50.9	839	49.4
Mother to child through breast milk	188	18.1	192	24.6	380	22.4
Avoid sharing cloths	78	7.5	69	8.8	147	8.7
Others(specify)	6	0.6	19	2.4	25	1.5
Prevention of HIV/AIDS through						
Use of condom	910	87.6	504	64.6	1414	83.3
Use of sterilized syringe & needles	509	49.0	368	47.2	877	51.6
screening of blood for AIDS	456	43.9	350	44.9	806	47.5
Any other(specify)	17	1.6	28	3.6	45	2.7
Source of information on STD and HIV/AIDS						
Teachers	378	36.4	377	48.3	755	49.6
Relatives/family members	33	3.2	77	9.9	110	7.2
Mass media	441	42.4	329	42.2	770	50.6
Friends	419	40.3	290	37.2	709	46.6
Newspaper	344	33.1	241	30.9	585	38.5
Internet	361	34.7	109	14.0	470	30.9
School curriculum	174	16.7	189	24.2	363	23.9
Any other(specify)	49	4.7	43	5.5	92	6.0
Source of information on HIV/AIDS should be given to the students						
Teachers	472	45.4	454	58.2	926	50.9
Relatives/family members	76	7.3	169	21.7	245	13.5
Mass media	311	29.9	147	18.8	458	25.2
Newspaper	275	26.5	120	15.4	395	21.7
Friends	288	27.7	202	25.9	490	26.9
Internet	306	29.5	103	13.2	409	22.5
School curriculum	160	15.4	155	19.9	315	17.3
Any other(specify)	35	3.4	16	2.1	51	2.8
Opinion of discussion about sex						
Frank and open	433	41.7	246	31.5	679	37.3
Confidential	475	45.7	425	54.5	900	49.5
No comments	131	12.6	108	13.8	239	13.1
					X^2=21.0	P<0.001
Worries or questions regarding sex						
Yes	269	25.9	255	32.8	524	28.8
No	737	71.0	505	64.9	1242	68.3
No response	32	3.1	18	2.3	50	2.7
					X^2=10.6	P=0.005
Menstrual problems among girls (N=655)			423	64.6	423	64.6
Felt need of getting more information on sex related issues						

Yes	486	46.8	464	59.5	950	52.2
No	553	53.2	315	40.0	868	47.7
No response	0	0.0	1	0.1	1	0.1
					X^2=30.51	P<0.001
Felt need of sex education						
Yes	724	69.7	610	78.2	1334	73.3
No	263	25.3	136	17.4	399	21.9
No response	52	5.0	34	4.4	86	4.7
					X^2=17.4	P<0.001
Perceived source sex education						
Parents	24	2.3	107	13.7	131	7.2
Friends	195	18.8	132	16.9	327	18.0
Teachers	211	20.3	174	22.3	385	21.2
Doctors	352	33.9	210	26.9	562	30.9
Health staff	55	5.3	65	8.3	120	6.6
Any other(specify)	12	1.2	8	1.0	20	1.1
					X^2=112.2	P<0.001
Right place to impart sexual education						
Schools	449	43.2	472	60.5	921	50.6
Mass media	241	23.2	72	9.2	313	17.2
News	105	10.1	37	4.7	142	7.8
Any other(specify)	52	5.0	104	13.3	156	8.6
					X^2=140.5	P<0.001

Awareness in respondents about prevention of HIV/AIDS was by the use of condom 1414(83.3%), use of sterilized syringe and needles 877(51.6%) and screening of blood for AIDS 806(47.5%). Knowledge of STD and HIV/AIDS was imparted to 770(50.6%) respondents by mass media, 755(49.6%) by teachers, 709(46.6%) by friends, 585(38.5%) by newspaper, 470(30.9%) on internet and 363(23.9%) school curriculum. Preferred source of information by respondents on HIV/AIDS were teachers 926(50.9%), friends 490(26.9%) and mass media 458(25.2%) reported. The most preferred source of information regarding HIV/AIDS was through teachers reported by 926(50.9%) students followed by friends reported by 490(26.9%) students.

Out of total students, 900(49.5%) were of the opinion that discussion of sex should be confidential whereas 679(37.3%) were in opinion that it should be frank and open. Boys were more likely to have opinion of frank and open discussion about sex (P<0.001).

There were 28.8% adolescent who had worries or questions regarding sex and 73.3% students were of the opinion that sex education is necessary for adolescents.

Discussions regarding sex related material were found among 83.0% students, contraceptives among 69.6%, sexual abuse among 67.2%, sexual intercourse among 65.1%, and teenage pregnancy among 61.7%, emergency contraceptives among 52.3% and pre-marital sex among 46.6%. There were 524(28.8%) adolescent who had worries or questions regarding sex and 950(52.2) felt the need of getting sex education and there were 1334(73.3%) students felt that sex education is necessary for adolescents. Girls were having more worries regarding sex (32.8%) as compared to boys (25.9%) (P=0.005). There were 562(30.9%) students who want to have sex education through doctors and 385(21.2%) students desired it should be given through teachers and 327(18.0%) students wants to take this information through friends. Girls were more desired to receive sex education (P<0.001). Preferred place to impart sexual education was recorded 921(50.6%) as schools.

DISCUSSION

Present study was an attempt to assess the reproductive behaviour of adolescent students in Chandigarh and their perceptions regarding reproductive health needs. Adolescents were found to be facing several reproductive and sexual health issues. In the present survey conducted among 1819 students including 1039 boys and 780 girls, awareness of legal age of marriage for girls was higher than that for boys and there were 78.8% respondents aware of legal age of marriage for girls as compared to 64.3% respondents aware of legal age of marriage for boys. Intimate friendship was reported by 22.8% respondents. High percentages of adolescents had discussions on reproductive health issues like discussions mainly within peer groups. Main topics of discussions included sex related material, contraceptives, sexual abuse, pre marital intercourse, teenage pregnancy, emergency contraceptives, and sexual health problems. Adolescent reported to have knowledge of various reproductive health matters but their information on several issues was not accurate and complete. Awareness about contraceptives was very high amongst both boys and girls, with maximum awareness of condoms. Knowledge about emergency contraceptives was comparatively low and girls were lacking more than

boys. Overall awareness of contraceptives was found among 83.7% respondents. Overall 5% use of contraceptives and about 7% reported indulgence in sexual intercourse was reported indicating unsafe sexual practices among surveyed adolescents. About 73% respondents felt need of family life education/sex education. Most preferred place to impart sexual education was schools.

Many students were not even aware of the legal age of marriages: 21 for boys and 18 years for girls. Despite the rising age at marriage and laws prohibiting marriage before 18 years for women and before 21 years for men, the majority of women marry as adolescents. Early marriage is the prime threat to health of women having consequences like teenage pregnancies, unwanted pregnancies, complications during abortions; RTI's and even death during conceiving. Early marriages and pre-marital unprotected sex are among main causes for unwanted teenage pregnancies. In a study on knowledge, attitude of senior secondary school children of Ludhiana regarding population control and contraception, only 54.5% boys and 70% girls knew the correct legal age for marriage for boys, 61.8% boys and 81.3% girls knew the correct legal age of marriage for girls.[16]

In the present survey, there were 62.6% respondents who had heard about teenage pregnancy which is in complete agreement with NFHS-3 findings reporting about 62% awareness of teenage pregnancy and prevalence of teenage pregnancy to be about 16%.[6] According to NFHS-4 National data, 8 percent of women age 15-19 have begun childbearing.[7]

Present study indicated exposures and indulgence in unsafe sexual sex. Majority of the urban adolescent students studying in Chandigarh were exposed to sex and sex related materials. Nearly half of the students in our study felt attraction towards the opposite sex and is more likely to be found in boys being attracted towards girls. Around one fifth of the students reported to have intimate friends and therefore might even become exposed to pre-marital sex. About 7% respondents accepted indulgence in sexual intercourse while only 5% reported use of contraceptives in our study. It clearly indicates unsafe sexual practices prevailing among adolescents in the studied community of adolescent students in Chandigarh. Our recent study conducted in Chandigarh and Himachal Pradesh, India reported about 51% students attracted physically to opposite gender and about 31% having intimate friends.[9] About 10% accepted involvement in premarital sex and 70% of such acts between age group 15-19 years has been reported among school going adolescents in Mizoram state of India.[5] The prevalence of sexual activity was found to be 20% (28. 5% among males and 18.8% among females) in a study conducted among 11Th class students of Chandigarh, sexual intercourse was reported to be 4% among males and 1% among females in that study.[8] In a study conducted in Mumbai, 26% of the boys and 3% of the girls were reported to have had sexual intercourse.[2] A study in Imphal City, Manipur reported 8.1% of the boys experienced sexual intercourse and none of the girls had reported to have such experience.[4] Three percent of young women and 1 percent of young men aged 15-24 years had sex before the age of 15 reported in NFHS-4 data.[7] Overall, the percentage of young people age 15-24 who have had sex before age 15 decreased considerably between NFHS-3 and NFHS-4 for women (from 10% to 3%) and men (from 2% to 1%).[6,7]

In our study, awareness regarding contraceptive was found among 83.7% respondents including 81.8% boys and 86.3% girls. Maximum awareness was found of condom followed by oral contraceptive pills. According to NFHS-3, only 59% of adolescents know about condoms and 49% know about oral contraceptives.[6] In the present study, there were 60.0% respondents including 62.1% among boys and 57.2% among girls, who were aware of emergency contraceptives (EC) mainly of i-pills. About 77% of students who were aware of emergency contraceptive (EC) knew only about I-pill. In a study significantly higher proportion of boys (85.1%) than of girls (47.3%) were aware of condoms, but more girls (87.3%) than boys (78.5%) knew about oral contraceptive pills.[16]

In our study, only about 5% overall use of contraceptives mainly emergency contraceptive was reported indicating existence of pre-marital sexual activity. Whereas, National Family Health Survey (NFHS-3) survey reported only 7% contraceptive use among married adolescents.[6] Whereas, only 14.1% (14.7% urban versus 13.9% rural) of unmarried sexually active adolescent females used a contraceptive.[7] In a study in rural areas of Himachal Pradesh, India also almost 6% boys reported use of a contraceptive method indicating existence of pre-marital sexual activity.[17]

In the present study, about 84% respondents were aware of RTIs and about 93% respondents were aware of HIV/AIDS. About 82% students knew that HIV/AIDS is spread via sexual contact. However, they were not aware of various other kinds of RTIs that have different symptoms than HIV. Avoidance of sex/abstinence as a preventive method of RTIs was reported by 44.2% respondents. NFHS-4 data reported 22 percent of young women and 32 percent of young men age 15-24 have comprehensive knowledge of HIV (National Family Health Survey, India 2017).[7] Present study supported gender-wise differences existing in adolescent reproductive and sexual behavior which is in agreement with findings of an earlier study conducted in Chandigarh wherein awareness of HIV/ RTI's and contraception were significantly more amongst females than males.[18]

Knowledge about preventing diseases by using condoms was found to be lacking in the present study. In this cross sectional study, it was noted that the most preferred

source of information regarding HIV/ AIDS is through teachers and the most favored place to impart sexual education was schools. Mass media came out to be the most common source of information regarding STD and HIV/AIDS followed by friends. Lack of reproductive health awareness and felt need of imparting information about sexual and reproductive health (SRH) was has been reported.[19] Our study supported the need of creating awareness regarding STD and HIV/AIDS through Teachers which is in agreement with an earlier study wherein about 51% students desired to get this knowledge from teachers as information about HIV/ AIDS from varied sources may not be accurate.[20]

In the present study, only 49.5% were of the opinion that discussion of sex should be confidential. Boys were more likely to have opinion of frank and open discussion about sex as compared to girls while girls were having more worries regarding sex. About 73% respondents felt need of sex education for adolescents. Most preferred place to impart sexual education was schools**.** Need of Adolescence health education program regarding various reproductive health issues like puberty, reproductive health, contraception and STIs especially HIV-AIDS among school going adolescents in Mumbai was suggested earlier.[3] About 81% adolescents wanted sexuality education to be included in school curriculum in a study conducted in Imphal.[4] Sex education in schools can play an important role in improving reproductive health of youths by reducing their risky activities.[21] With growing urbanization and desires for open and frank discussions about sex related issues by adolescents, stigma and associated with open discussions regarding sex related issues can't be ruled out completely in Indian contexts. Due to lack of proper health education, there is likelihood of indulging in risky behavior by adolescents. School based Reproductive Health education amongst the adolescents may be helpful in minimizing negative outcomes and prevent unwanted health complications. Addressing their reproductive health needs through school based reproductive health education may provide health benefits in terms of delaying age at marriage, reducing incidence of teenage pregnancy, and reduction in unsafe sexual and other risky behaviors of adolescents.

LIMITATIONS

Potential limitations of our study are that adolescent students may have under reported their sexual experiences. In the traditional Indian norms, which inhibit premarital relationship with the opposite sex, adolescent students may be unwilling to disclose them, thus leading to under-reporting and possible measurement error. Moreover, present survey included only school going adolescents and hence it does not represent those not studying at all not attending schools presently due to drop-outs.

CONCLUSIONS AND SUGGESTIONS

Adolescents were found to be facing several reproductive and sexual health issues. They lack in reproductive health awareness and their reproductive health needs should be addressed in present contexts. Sexual health related problems of adolescents can be protected by correct knowledge, attitude and practices regarding sexuality and sexual behavior. There is felt need of Sexual Health Education (SHE)/ Family Life Education (FLE) to be imparted at school levels for improving their reproductive health. Adolescents need to be educated about the proper method of contraception and safe/protected sexual activities, teen pregnancies.

Source of Support: Indian Council of Medical Research (ICMR), New Delhi, India.

ACKNOWLEDGEMENTS

Present study is a part of Indian Council of Medical Research (ICMR) sponsored project **"Natural Mentoring and Its Impact on Health Conditions of Adolescents". (IRIS ID No: 2010-02430).** Authors are grateful to Indian Council of Medical Research (ICMR), New Delhi, India for providing financial assistance. Authors also acknowledge the assistance by the ICMR project staff Ms Nisha Rana, Ms Nisha Sharma, and Mr Neeraj Kumar for their respective contributions.

REFERENCES

1. Bhatia V, Swami HM. Fertility control methods: Knowledge of Adolescent girls in schools of Chandigarh." Ind J Med Sc, 1999; 54: 342.
2. Abhram L, Kumar K. Sexual experiences and their correlates among college students in Mumbai city, India. International Family Planning Perspectives, 1999; 25: 139-46.
3. Shaikh ZA. Knowledge of Reproductive Health and HIV among School Going Adolescents of Mumbai. Ind. J. Youth Adol. Health, 2014; 1(3&4): 26- 32.
4. Akoijam BS, Pal SR, Devi H S, Devi Y N, Oinam J. Knowledge and Perception of Sexual Behaviors and Sexuality Education among Adolescents in Imphal City, Manipur-A Cross-Sectional Study. Ind J Youth Adol Health, 2015; 2(3): 31-34.
5. Tiwari VK, Piang LK, Sherin TP Raj et al. Correlates of Social, Demographic and Behavioral Factors affecting Adolescent Sexuality in a Traditional Society in India: Perspectives and Challenges. Ind. J. Youth Adol. Health, 2015; 2(3): 44-57.
6. National Family Health Survey, India NFHS-3. International Institute for Population Sciences (IIPS) and Macro International. Volume I. Mumbai, 2007.
7. National Family Health Survey, India (NFHS-4). International Institute for Population Sciences (IIPS) and Macro International. Volume I. Mumbai, 2017.
8. Laxmi PVM, Gupta N, Kumar R. Psychosocial Predictors of Adolescent Sexual Behavior. Indian J Pediatr, 2007; 74(10): 923-926.

9. Kumar D, Yadav RJ, Pandey A. Reproductive and Sexual Health Behavior of School Going Adolescents In Chandigarh and Himachal Pradesh, India. Int J of Curr Res, 2015; 7(7): 17856-61.
10. Verma RK, Surendra S, Guruswami M. What do school children and teachers in rural Maharashtra think of AIDS and sex? Health Transition Review, 1997; 7(supplement): 481-85.
11. Agampodi SB, Agampodi TC, and Piyaseeli UKD. Adolescents perceptions of reproductive health care services in Sri Lanka. BMC Health Serv Res, 2008; 3(8): 98.
12. Hughes J, McCauley AP. Improving the fit: adolescents' needs and future programs for sexual and reproductive health in developing countries. Stud Fam Plann, 1998; 29(2): 233-245.
13. Cleland J, Conde-Agudelo A, Peterson H, Ross J, Tsui A. Contraception and health. Lancet, 2012; 380(9837): 149-156.
14. Blanc AK, Tsui AO, Croft TN, Trevitt JL. Patterns and trends in adolescents' contraceptive use and discontinuation in developing countries and comparisons with adult women. Int Perspect Sex Reprod Health, 2009; 35(2): 63-71.
15. Ethical guidelines For Biomedical research on Human participants. Indian Council of Medical Research, 2006.
16. Benjamin AI, Panda P, Singh S, Bhatia AS. Knowledge and Attitude of Senior Secondary School Students of Ludhiana Regarding Population Control and Contraception. Ind J Com Med, 2001; 26(4): 201–7.
17. Kumar R, Prinja S, Lakshmi PV. Health care seeking behavior of adolescents: Comparative study of two service delivery models. Indian J Pediatr, 2008; 75: 895-9.
18. Gupta M, Bhatnagar N, Bahugana P. Inequity in awareness and utilization of adolescent reproductive and sexual health services in union territory, Chandigarh North India. Indian J Public Health, 2015; 59: 9-17.
19. Sharma S, Pillai Kuttappan AK, Raut D. Understanding Sexuality and Sexual Health Needs among Adolescents: KAP Study among School Going Adolescents. Ind. J. Youth Adol. Health, 2016; 3(1).
20. Pathrudu G B, Patnaik KK, Geethanjali MP. Knowledge, Attitudes, and Perceptions about HIV/AIDS in Teenage Students in a High Prevalence District in India. Journal of Evidence based Medicine and Healthcare, 2015; 2(43): 7695-02.
21. Ross D, Dick B, Ferguson J. (Editors). UNAIDS interagency task team on HIV and young people. Preventing HIV/AIDS in young people: a systematic review of the evidence from developing countries." WHO Technical Report Series, 2016; 103-107.