



Research Article

Assessment of Reproductive Health Awareness among Adolescent Girls in a City of South India: An Interventional Study

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ABSTRACT

Background: An adolescent in the age group of 10 – 19 years is subjected to the vicious cycle of early marriage; early, repeated pregnancies; poor nutrition and ill health. In developing countries, close to 12.7 million girls under the age of 19 give birth each year. Adolescents lacking in knowledge of reproductive health will not be able to make informed decisions. A study to evaluate and improve the existing awareness levels of reproductive health among adolescent girls in the South of India is the need of the hour.

Objectives: This study aimed to assess the existing reproductive health awareness among adolescent girls and evaluate the change in awareness levels of reproductive health after educational intervention.

Methods: A descriptive study with an educational interventional was carried out in high schools and pre university colleges in a city of south India. 800 students from Class VIII to XII from 6 educational institutions were studied using a standardized, pre validated questionnaire. Baseline evaluation of reproductive health awareness among these students was done followed by an educational health intervention. Post intervention awareness levels were assessed using the same questionnaire after an interval of three months to evaluate for change.

Results: The mean age of the study population was found to be 14.91 (+1.45) years. Teaching intervention improves knowledge on reproductive and sexual health ($p < 0.001$). Predictors of poor pre intervention knowledge levels: those with uneducated fathers (OR= 0.31, $p=0.005$); not on social networking sites (OR= 0.23, $p<0.001$); lower age (early adolescence) (OR= 2.46, $p<0.001$); school going adolescents (OR= 3.47, $p<0.001$)

Conclusion: This study highlights the gross deficiencies present among adolescent girls with respect to reproductive and sexual health awareness. Various measures must be put into place to ensure better reproductive health of the adolescent.

Keywords: Adolescent; Reproductive health; Intervention



INTRODUCTION

The World Health Organization (WHO) identifies adolescence as the period in human growth and development that occurs after childhood and before adulthood, from ages 10 to 19 (1). In this critical phase of transition they are burdened by physical and mental changes and also have to deal with various other stressors. Due to the psychological, emotional, hormonal and physical changes it is necessary to empower the adolescent with education regarding reproductive and sexual health.

Today's adolescents are 1.2 billion strong and constitute 16% of the world's population (2). More than half of the world's adolescents live in Asia. India has the highest adolescent population in the world, with an estimated 253 million adolescents, constituting 21.4% of the country's population (3,4). India also has the highest proportion of adolescents closely followed by China with 201 million adolescents (4).

This age group is one of simple but crucial reproductive health needs- like menstrual hygiene, contraception and safety from Sexually Transmitted Infections (STIs). These when unattended lead to problems of public health importance such as adolescent pregnancy, unsafe abortion, Reproductive Tract Infections (RTIs), STIs and Acquired Immuno-Deficiency Syndrome (AIDS) and social problems. These in turn lead to adverse pregnancy outcomes like Low Birth Weight (LBW) and high Infant Mortality Rate (IMR).

Adolescent girls in India are a largely invisible population, amounting to 113 million, or 20% of the world's adolescent girls. They are trapped in a society with varied socio-cultural practices that leaves them powerless to make essential life-choices (5). Issues such as lack of autonomy to take decisions regarding marriage, sexual relations, education, career, etc still plague this age group (6). Adolescent females are often subjected to the vicious cycle of early marriage, early and repeated pregnancies, poor nutrition and ill health. In developing countries, close to 12.7 million girls under the age of 19 give birth each year (7,8). Data from National Family Health Survey- 4 (NFHS 4) reported 33,928 live births by women under 20 years of age in India (9).

Even with programmes such as the Rashtriya Kishor Swasthya Karyakram (RKSK), Reproductive, Maternal, Newborn, Child and Adolescent Health, the health of the girl child has always been an area of neglect in our country. Menstrual practices are also shadowed by unnecessary and sometimes even harmful cultural or superstitious practices in many countries (10,11) and this leads to a greater need for health awareness in the adolescent period. Improving the reproductive health among adolescent girls can only occur by educating them and promoting health awareness and healthy behaviour among them. Better reproductive health awareness will promote a decrease in morbidity and mortality, fair delivery of adolescent healthcare rights, and subsequently safeguard future generations (12). It has also been seen that menstruation also significantly impacts the education of the girl child (13).

Until recently still lack of data pertaining to reproductive health awareness among adolescent girls from South India. A study to evaluate and improve the existing awareness levels of reproductive health among adolescent girls in the South of India is the need of the hour.

METHOD

A cross sectional study with an educational intervention was carried out among adolescent girls from randomly selected High Schools and Pre-University (PU) colleges in urban Bangalore during the period from January to May 2017. Based on a previous study by Pratinidi et al. (14) the change in awareness levels post intervention was found to be 19.05% at 5% significance with 15% allowable error, sample size was calculated to be 754 (rounded off to 800). Among the schools that consented to participate in the study, a total of 6 educational institutions, 4 schools and 2 PU colleges were randomly selected from the master list of eligible schools and PU colleges in the city. Based on the strength of these institutions it was decided that all girl students in these schools and colleges will be included in the study in order to achieve the desired sample size. For the purpose of equal representation across the age group 400 students from high schools and 400 from PU colleges were included in the study. Students absent on the day of the study-either for pretest or posttest were excluded from the study.

Data collection was started after obtaining clearance from the Institutional Ethical Committee. Permission was obtained from the education officer of Bhruath Bangalore Mahanagara Palike (for corporation schools), Deputy Director of Public Instruction, Bangalore city (for private schools) and Deputy Director of PU board. As the students are minors, informed consent for study was obtained from the parents of the students through teachers, assent was obtained from students. Pre and post test assessments were conducted six months apart. Data regarding socio demographic profile and various aspects of reproductive health were collected by pre tested, semi-structured questionnaire administered to the students (self-administered questionnaire method). A modified WHO questionnaire on Adolescent Reproductive and Sexual Health was used.

For the educational intervention, teachers selected by the institution were trained on relevant aspects of adolescent reproductive health. The educational intervention was delivered three months after the pretest with the aid of power point presentations, by the trained teacher in the presence of the doctor. Education was carried out on topics such as physiology of pregnancy, sexually transmitted infections-modes and prevention, contraception, etc. for duration of 2 hours in each institution. For scoring, each right answer was scored as 1 and wrong answer as 0. The aggregate score of all domains was summed to arrive at the total score. The academic performance of the students was assessed based on the average score in the previous exam. This was recorded from the students' marks card with the help of the class teacher. Posttest evaluation was carried out three months after the educational intervention was delivered.

Data was entered onto a computerized Excel (Microsoft Excel 2007) spread sheet and analyzed using SPSS version 20. Descriptive analysis was done (means, proportions, and percentages) for demographic variables. Categorical variables were compared using Chi square test. Intra group comparisons were done using the Paired t- test (for continuous data) and Wilcoxon Matched Pairs Signed-Ranks Test (for categorical data). Variables found to be significantly associated with knowledge levels by the Chi square test were analyzed for their simultaneous influence on the same by logistic regression. P value of < 0.05 was considered significant.

The following definitions were used for analysis:

- 1. Educational status of parents:** those with a minimum education of 10th standard were considered as Educated while those with no formal education received/ less than 10th standard were considered as Not educated
- 2. Knowledge levels** (pre and posttest): those with a score of 25 – 36 were categorized as Good; 10 – 24 were considered Average and 0 – 9 were classified as having Poor knowledge levels
- 3. Academic performance** (based on the average score in the previous exam recorded from the students marks card) was classified as good if they had an annual average score of 80% or above; Average if the annual average score was 65% - 79% and Poor when the annual average score was 64% or below

RESULTS

Data analysis revealed a total of 800 students participated in the study. 474 (59.3%) study participants were from high schools and 326 (40.7%) from pre university colleges. The mean (SD) age of this group was found to be 14.91 (1.45) years. Of the 800 students, 158 (20%) belonged to class 8, 174 (22%) to class 9, 142 (17%) were from class 10, 182 (23%) from class 11 and 144(18%) were from class 12.647 (80.9%) students were Hindus, 86 (10.6%) were Muslims, 60 (7.5%) were Christians.

There was significant improvement in knowledge levels post the educational intervention, in all domains-namely pertaining to puberty, menstruation, pregnancy, contraception, STDs and HIV and abortion ($p < 0.001$) [Table 1].

Table 1. Knowledge across different domains

KNOWLEDGE DOMAINS	Mean (SD)		p^*
	PRE-TEST	POST TEST	
PUBERTY	1.72	5.36	<0.001
MENSTRUATION	4.54	6.11	<0.001
PREGNANCY	2.52	6.58	<0.001
CONTRACEPTION	1.05	4.14	<0.001
STDs and HIV	2.97	6.97	<0.001
(*Paired t test, at 95% CI)			
ABORTION (abortion is the best method of preventing pregnancy)	37.3% (n=298)	22.6% (n= 181)	<0.001
(*Mc Nemar's test)			

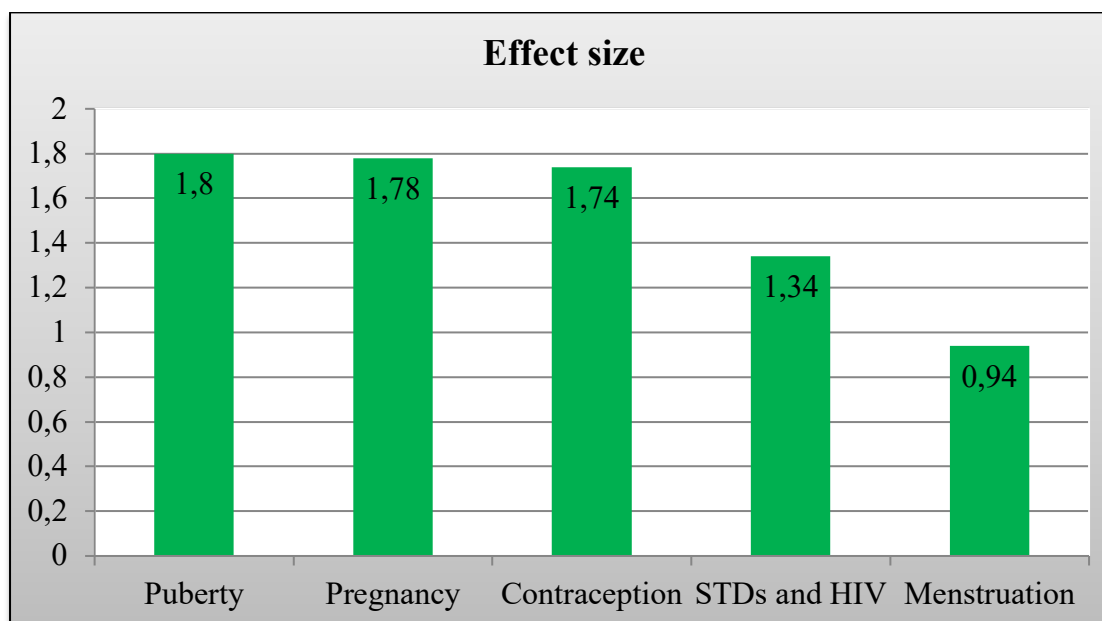
All students showed significant improvement in knowledge levels post educational intervention. During the pretest it was seen that 414 students and 71 students respectively were average and good in their knowledge levels, it improved to 75 only (average) and 723 (good) in the post-test. Only 2 students who initially showed poor knowledge levels remained in the same group post the educational intervention (0.6%) [Table 2].

Table 2: Change in performance of students in terms of knowledge categories

		Post test			TOTAL	p*
		Poor	Average	Good		
Pre test	Poor	2	51	262	315	<0.001
	Average	0	22	392	414	
	Good	0	2	69	71	
TOTAL		2	75	723	800	

(*Wilcoxon Matched Pairs Signed-Ranks Test, at 95% CI)

The effect of the educational intervention was calculated using effect size and it was found that the maximum effect was seen in the puberty domain with an effect size of 1.8 [Figure 1]

**Figure 1.** Effect size of the various domains

Academic performance was seen to have a significant impact on the baseline knowledge possessed by the adolescent girls. Among the good academic performers, 59.7% (n=228) were found to have good reproductive and sexual health awareness in the pre intervention stage [Table 3].

Table 3. Association between academic performance and overall knowledge score prior to intervention (outcome variable)

Academic performance	Pre intervention knowledge levels		Total	χ ² p
	Poor	Good		
Good	154 (40.3%)	228 (59.7%)	382	0.002
Average	91 (31.2%)	201 (68.8%)	292	
Poor	52 (49.1%)	54 (50.9%)	106	
Total	297	483	780	

The knowledge levels of students with fathers who have an education of at least 10th standard were 0.31 times better than those whose fathers had lesser education. Knowledge levels of adolescents who were a part of one or more social networking sites was 0.23 times better than

those who were not a part of social networking sites. Older adolescents had significantly better knowledge than the younger adolescents (OR = 2.46). Adolescents with higher education (college) had significantly better knowledge than the school going adolescents (OR = 3.47) [Table 4].

Table 4. Predictors of pre intervention knowledge by regression analysis

Predictor variables	Odds ratio	95% Confidence Intervals		p
		Lower limit	Upper limit	
Father's education	0.31	0.138	0.699	0.005
Socio-Economic Status	0.87	0.696	1.078	0.19
Academic performance	0.81	0.633	1.032	0.087
Social networking	0.23	0.117	0.440	<0.001
Age groups	2.46	1.674	3.617	<0.001
Educational status (in college vs School)	3.47	2.197	5.465	<0.001

DISCUSSION

Adolescence is an impressionable and vulnerable stage in a child's life. Foundations of a healthy and responsible lifestyle must be laid in the formative years. Education plays a great role in shaping the behaviour and choices made by adolescents. This study highlights the gross lacunae that are present in adolescents with respect to reproductive and sexual health. The factors that are surprising and warrant consideration are that most of these adolescents have already attained menarche and are going through their reproductive cycles every month but are grossly ignorant regarding the physiology of the same. In an age and time where connectivity is highly valued and the internet is just a tap away, it is surprising to note that simple messages of menstrual hygiene, prevention of STDs, importance of good health care in the adolescent age group, etc. have been ineffective in reaching the target group.

A study conducted in government schools of Delhi found that only 40% girls had prior knowledge of menstruation (15). A scoping review found puberty and menstruation knowledge among young adolescents in low-and middle-income countries to be inadequate (16). Our study showed around 9% of the students possessed poor knowledge of menstruation prior to the intervention.

This study shows a significant improvement in knowledge among the adolescents post educational intervention. This is similar to the studies by Manjula R. et al. (17) and various other studies from India and abroad (18), who found that there was overall significant change in knowledge ($p < 0.001$) after educational intervention. This is also similar to a study done by Pratinidi A K et al. (14) where it was observed that the change in knowledge was 8 marks and 19.05% increase in percentage between pre and post-test ($p < 0.00$). A study conducted by Rao R. et al. (19). showed that the knowledge regarding menstruation and menstrual hygiene among adolescent girls improved significantly from 77.2% to 95.6% and 91.8% to 100% respectively after intervention ($p < 0.0001$).

There are not many studies that have looked at the impact of educational intervention in the different domains. Our study has shown that the highest impact was in the puberty domain. This is probably because the adolescent students can better relate to this current phase of their life. However other domains followed closely in effect size.

CONCLUSION

Better reproductive health awareness is the need of the hour. With a fast growing adolescent population such as in our country, emphasis on educating girls on reproductive health will improve the general health of our population and reflect in the improvement of our health indicators. Educational intervention, as seen from this study, is a highly effective means of achieving the same. In agreement with a study done among 12- to 19-year-old females in Karaj, Iran (20), we also feel that it is important to maintain continuous training at the school level to improve the knowledge of these adolescent girls. Thus, as seen in this study and taking into account the factors identified by a qualitative study done by Zainab Alimoradi, it is necessary to strengthen education pertaining to reproductive health while simultaneously improving healthcare access and delivery to adolescents (21).

Various measures must be put into place to ensure better reproductive health of the adolescent. At the individual level it is important to teach adolescent girls to pay attention to good nutrition, cleanliness, hygiene and responsible reproductive behavior. Efforts must be made to teach and educate the girl child on the anatomy and physiology of the reproductive system. At the family level parents must take initiatives to assume their primary role in the sexual education of their children, rather than relying on the schools to provide the appropriate orientation. They must be encouraged to provide emotional and psychological support to the adolescent.

At the community level it is vital to have culturally appropriate Information, Education and Communication strategies for improving adolescent reproductive health. More teachers must receive training in sexual and reproductive health topics, taking into account the special characteristics of the adolescent population. Appropriate curriculum, methodologies and materials should be developed taking into account cultural differences. This is further supported by findings of the study by Sarah Blake et al. (22) where in it was seen that adolescents showed interest in learning about reproductive health when provided with the appropriate resources.

Authors' contribution

Dr. JPK- research design, data collection, analysis and manuscript writing. Dr. RTS- research design, analysis. Dr. ID- data collection, analysis

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Conflict of interest

There is no conflict of interest in this research.

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