



INTERVENTIONAL STUDY ON AWARENESS ABOUT REPRODUCTIVE HEALTH AMONG SCHOOL-GOING ADOLESCENT GIRLS IN MAHARASHTRA

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ABSTRACT

Background: Adolescence, a critical developmental phase, poses challenges exacerbated by cultural taboos, impacting reproductive health education and services. This interventional study aims to assess baseline awareness levels and evaluate the impact of a structured intervention program on enhancing knowledge about menstrual hygiene and contraceptive measures among adolescent girls, ultimately contributing to evidence-based policies promoting adolescent well-being in Maharashtra. **Methods:** It was an interventional study consisting of a pre-intervention test, reproductive health educational intervention session and post-intervention test conducted among 750 school-going adolescent girls in Maharashtra. **Results:** There was a statistically significant increase in awareness levels of the study participants across all domains of reproductive health, including menstruation, pregnancy and contraceptives ($p < 0.05$), following the reproductive health educational intervention. **Conclusion:** The study highlights the significant enhancement in awareness about reproductive health, menstrual hygiene and contraceptives among school-going adolescent girls in Maharashtra following the intervention program, advocating for the integration of comprehensive reproductive health education into school curricula to foster informed and healthy individuals.

KEYWORDS : Adolescent girls, Reproductive health, Contraceptives, Intervention.

INTRODUCTION:

Adolescence, spanning from 10 to 19 years, signifies a pivotal juncture of physical, psychological, and social development, transitioning from childhood to adulthood.¹ With 1.2 billion adolescents worldwide encountering myriad challenges during this phase, India, where adolescent girls constitute 22% of the female populace, confronts significant hurdles in providing adequate reproductive health information and services, often hindered by cultural taboos.^{2,3} This deficiency in knowledge exposes adolescents to the risks associated with inappropriate sexual behaviours, such as early pregnancies and sexually transmitted diseases, exacerbated by prevailing cultural norms and misconceptions, particularly concerning menstruation.⁴

Recognising the critical need to address these gaps, the current study embarks on a pre-structured intervention program aimed at enhancing awareness levels regarding reproductive health among adolescent girls in Maharashtra. The study's objectives include assessing baseline awareness levels regarding menstrual hygiene and various contraceptive measures among school-going adolescent girls and evaluating the reproductive health education intervention's impact on enhancing their awareness. By identifying knowledge gaps and fostering informed discussions, this research aspires to contribute to evidence-based policies and interventions that promote comprehensive adolescent well-being in Maharashtra.

MATERIAL AND METHODS:

The institutional ethical committee's approval was obtained for this interventional study consisting of a pre-intervention test, intervention in the form of reproductive health education, and post-intervention test conducted among school-going adolescent girls in Maharashtra. The study was conducted over a period of seven months, from 01 December 2023 to 30 June 2024, within selected schools in Maharashtra. The adolescent girls aged between 10 to 19 years, enrolled in classes 6th to 12th, were eligible for inclusion in the study.

Exclusion criteria included unwillingness to participate and failure to attend all sessions of the adolescent health education program.

The sample size was calculated on the basis of prevalence of knowledge regarding reproductive and sexual health with confidence limit 95% and margin of sampling error 10% by using the formula $n = 4pq/\lambda^2$. Literature review reveals that the prevalence of knowledge regarding reproductive and sexual health among school going adolescents in India is 35%.^{5,6} Thus, with a confidence level of 95% and a margin of sampling error of 10%, the calculated sample size was 743, which was rounded up to 750. One school was randomly selected from each of the six revenue divisions of Maharashtra, ensuring representation from both rural and urban areas. A total of 125 participants were enrolled from each selected school using Systematic Random Sampling.

The study participants were subjected to a pre-intervention test. The intervention consisted of a structured adolescent reproductive health education program, conducted over a week and divided into four sessions on menstrual hygiene, awareness of contraceptives and reproductive and sexual health. The content of this program was based on the guidelines for sexuality education by the UNESCO,⁷ syllabus for adolescent health education,⁸ guidance booklet on menstrual hygiene management by Government of India⁹ and 'On the horizon of adulthood' by UNICEF.¹⁰ A post-intervention test was conducted 4 weeks later to assess the effectiveness of the intervention program. The data was compiled and statistical analysis was done with SPSS 20.0 statistical software. Significance level $P < 0.05$ was considered statistically significant.

RESULTS:

A total of 750 school-going adolescent girls participated in this interventional study, with a mean age of 14.9 ± 1.21 years. The demographic profile of the participants revealed that the majority, comprising 79.3%, identified with the Hindu religion,

63.2% attended schools in urban areas and 82.7% of the participants were from nuclear families. Following the intervention, there was a significant improvement in the awareness levels of the study participants across all domains of reproductive health, including menstruation, pregnancy and contraceptives ($p < 0.05$).

Table 1 illustrates the improvement in awareness regarding variables related to menstrual health and menstrual hygiene among participants before and after the intervention, along with the difference between the two phases.

Table 1. Awareness About Reproductive Health In Adolescent Girls

Sr. No.	Variables of Awareness about Menstrual and Reproductive Health	Pre-Intervention	Post-Intervention	Chi-square value (P-value)
1.	The first sign of pregnancy is 'missed period'	450 (60%)	720 (96%)	283.21 (0.0001)
2.	Fusion of sperm with ovum is 'fertilization'	345 (46%)	675 (90%)	333.64 (0.0001)
3.	Knowledge about 'safe period'	143 (19%)	473 (63%)	299.97 (0.0001)
4.	'Uterus' is the source of menstrual bleed	188 (25%)	578 (77%)	405.78 (0.0001)
5.	Physiological/Hormonal changes as the reason for menstrual bleed	300 (40%)	578 (77%)	212.27 (0.0001)
6.	Use of 'sanitary pads' during menstruation	488 (65%)	690 (92%)	161.36 (0.0001)
7.	Use of 'cloth pieces' during menstruation	278 (37%)	60 (8%)	181.50 (0.0001)
8.	Menstrual hygiene by regular cleaning of external genitalia	225 (30%)	548 (73%)	278.47 (0.0001)
9.	Cleaning of external genitalia with plain water	158 (21%)	450 (60%)	235.82 (0.0001)
10.	Cleaning of external genitalia with soap and water	128 (17%)	405 (54%)	233.30 (0.0001)
11.	During menses, sanitary pads changed frequently	158 (21%)	645 (86%)	635.62 (0.0001)
11.	Cloth pieces reused during menstruation	263 (35%)	135 (18%)	56.03 (0.0001)
12.	Sanitary pads/cloth pieces disposed in dustbin	435 (58%)	713 (95%)	286.87 (0.0001)
13.	Do not follow 'isolation' during menstruation	608 (81%)	623 (83%)	1.019 (0.3127)
14.	Basic knowledge about pubertal changes, menstruation and reproductive health	278 (37%)	608 (81%)	300.27 (0.0001)

Table 2 shows the awareness of participant students regarding different methods of contraception pre- and post-intervention. It was observed that overall awareness about use of contraceptives was poor during pre-test and a remarkable improvement was noted following intervention ($P < 0.0001$).

Table 2. Awareness About Contraceptives In Adolescent Girls

Sr. No.	Awareness about contraceptives	Pre-Intervention	Post-Intervention	Chi-square value (P-value)
1.	Oral Contraceptive Pills	233 (31%)	645 (86%)	466.23 (0.0001)

2.	Condoms	413 (55%)	653 (87%)	186.75 (0.0001)
3.	IUCDs	113 (15%)	630 (84%)	712.83 (0.0001)
4.	Tubectomy	90 (12%)	443 (59%)	362.65 (0.0001)
5.	Vasectomy	113 (15%)	413 (55%)	263.50 (0.0001)
6.	Emergency Contraceptives	98 (13%)	675 (90%)	888.65 (0.0001)
7.	Basic awareness about contraceptives to avoid pregnancy	210 (28%)	698 (93%)	664.54 (0.0001)

DISCUSSION:

Our study demonstrates a substantial improvement in awareness regarding reproductive health among school-going adolescent girls in Maharashtra following the implementation of a reproductive health education intervention. These findings resonate with previous research conducted across various regions of India, suggesting that structured adolescent health education programs can effectively enhance knowledge and attitudes concerning reproductive and sexual health^{11,12,13}.

One notable improvement identified in our study pertains to improvement in awareness regarding menstrual health amongst participants. The prevalence of basic awareness in this domain increased significantly from 37% to 81% post-intervention. These findings are similar to the studies by Manjula R. et al.¹⁴ and various other studies from India and abroad¹⁵, who found that there was overall significant change in knowledge about reproductive health ($p < 0.001$). A study conducted by Rao RS. et al. 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 ($p < 0.0001$).¹⁶ Another crucial aspect addressed in our study was the knowledge about the first sign of pregnancy. The proportion of adolescent girls unaware of 'missed period' as the initial sign of pregnancy decreased from 40% to a mere 4% post-intervention. This improvement is consistent with the study by Rao RS. et al. where a similar lack of awareness was identified in around 40% of students, but reproductive health education significantly improved knowledge by 35.3% (95% CI = (33.4, 37.2)). Notably, our findings also shed light on the low baseline knowledge levels regarding female anatomy among adolescent girls, with only 25% correctly identifying the uterus as the organ for menstrual blood pre-intervention. However, following health education sessions, this knowledge gap narrowed substantially to 77%, reflecting the positive impact of targeted educational interventions on enhancing anatomical understanding. This mirrors the findings in the study by Nemade et al., where correct answers about source of menstrual blood improved from 33.64% in the pre-test to 99.54% in the post-test.¹⁷ Furthermore, our study documented a significant shift in menstrual absorbent practices. The use of sanitary pads increased from 65% to 92%, surpassing the findings in a comparative study by Jogdand in Guntur, Andhra Pradesh.¹⁸ This positive change aligns with the study conducted by Arora A, where pre-test sanitary pad users increased from 35% to 55% post-test.¹⁹ Assessment of menstrual hygiene practices revealed a notable increase in the proportion of girls washing their genitals with soap and water during menses, from 17% to 54% post-intervention. In the study conducted by Nemade et al. showed only 29.95% girls used to wash their genitals with soap and water during menses which improved to 90% after giving health education.²⁰

In our study, 81% of the adolescent girls did not follow the practice of isolation during menstruation which improved to

83% after giving health education. This change was not statistically significant. In the study conducted by Nemade et al.¹⁷, 48.23% girls did not practice isolation in the pre-test which improved to 52.28% in the post-test. The practice of social restriction and isolation during menstruation could not be altered much, indicating the deep-rooted social beliefs about menstruation which may take longer time to change.

The basic awareness regarding contraceptive methods was in 28% of the study subjects before health education which is similar to number of other studies wherein the awareness about contraceptives was in less than 30% study participants.^{20,21} However, after the intervention, a substantial increase was noted, reaching to awareness in 93% study participants. Similar positive outcomes were also observed in the study by Rao RS, et al.¹⁶, with an overall knowledge increase from 14.4% to 68%. The significance of interventions is highlighted by studies conducted by Rao RS, et al., showing substantial improvements not only in awareness about contraceptive methods but also in knowledge related to ovulation, first signs of pregnancy and fertilization.

Comparing pre-intervention and post-intervention data, we observed a substantial increase in awareness among study participants regarding temporary contraceptive methods like oral contraceptives, condoms and intrauterine contraceptive devices (IUCDs). Prior to the intervention, awareness rates stood at 31%, 55% and 15% respectively, which rose to 86%, 87%, and 84% post-intervention. These results are consistent with similar studies, such as one conducted by Rao RS et al. in Udupi Taluk, Karnataka, which reported comparable improvements in knowledge regarding temporary contraceptive methods. In a study conducted by Rao RS et al., the knowledge about temporary contraceptive methods like oral contraceptives, condoms and IUCDs was present in 35%, 18.5% and 11.1% participants, which improved to 89.7%, 85.9% and 84.9%, respectively in post-intervention assessment.

Similarly, awareness regarding permanent sterilization methods saw significant enhancement. Pre-intervention awareness rates were low, at 12% for tubectomy and 15% for vasectomy, but increased substantially to 59% and 55% respectively in post-intervention test. This trend mirrors findings from the study conducted by Rao RS et al. wherein the knowledge about tubectomy and vasectomy was present in 12.5% and 1.9% participants, which improved to 59.9% and 7.1%, respectively in post-intervention test.

CONCLUSION:

The pre-intervention awareness regarding reproductive health, menstrual hygiene and contraceptives was poor for majority of the participants, and the intervention program resulted in substantial improvement in the same. The study findings emphasize that schools can act as effective platforms for delivering reproductive health education to adolescents. This evidence underscores the immediate need to integrate comprehensive reproductive health education into school curricula, thereby contributing to the formation of healthy and well-informed young individuals for the future.

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Conflict Of Interest: None

REFERENCES:

1. World Health Organization. Adolescent Health. Available from: http://www.who.int/topics/adolescent_health/en. [accessed on 2024 Feb 14].
2. Guwahati PT. India has Largest Adolescent Population in the World. *Hindustan Times*; 26, February 2011. Available from: <http://www.hindustantimes.com/india-news/india-has-largest-adolescent>

3. population-in-the-world/article1-667147.aspx. [Last accessed on 2024 Feb 15].
3. Rashtriya Kishor Swasthya Karyakram. Strategy Handbook; January, 2014. Available from: http://in.one.un.org/img/uploads/RKSK_Strategy_Handbook.pdf. [accessed on 2024 Feb 13].
4. Kumar A, Srivastava K. Cultural and social practices regarding menstruation among adolescent girls. *Soc Work Public Health* 2011; 26:594-604.
5. WHO/MOHFW. Reproductive and Sexual Health of Young People in India. Secondary analysis of data from National Family Health Surveys of India - 1, 2, 3 (1992-2006) for the age group 15-24 years. New Delhi: GOI, MOHFW; 2009. [Cited 2012 August 25] Available from: URL: http://mohfw.nic.in/NRHM/Documents/RSH_of_YP_in_India.pdf.
6. Mittal K, Goel MK. Knowledge Regarding Reproductive Health among Urban Adolescent Girls of Haryana. *Indian J Community Med*. 2010;35(4):529-30.
7. International Technical Guidance on Sexuality Education: An Evidence-Informed Approach for Schools, Teachers and Health Educators; December, 2009. Available from: <http://unesdoc.unesco.org/images/0018/001832/183281e.pdf>. [Last accessed on 2024 Feb 25].
8. Hiremath LD, Hiremath DA. Essentials of Community Medicine-A Practical Approach. 2nd ed. New Delhi: Jaypee Brothers Medical Publishers; 2012.
9. United Nations Children's Fund. Sharing Simple Facts, Useful Information about Menstrual Health and Hygiene. United Nations Children's Fund; 2008. Available from: <http://www.susana.org/en/resources/library/details/1151>. [Last accessed on 2024 Jan 26].
10. Bhatlavande P, Gangakhedkar R. On the Horizon of Adulthood. Mumbai, India: United Nations Children's Fund; 1999.
11. Sancheti PV, Mangulikar SK, Mulaje SM. Interventional study to assess knowledge and attitude of school going adolescents about reproductive health. *Int J Interdiscip Multidiscip Stud* 2014;2:96-9.
12. Nirgude AS, Naik PR. Effectiveness of Adolescence Education Programme among Adolescent Girls and Boys: A School Based Intervention Study in Nalgonda District of Andhra Pradesh. *Indian J Matern Child Health* 2010;12:1-7.
13. El-Lassy RB, Madian AA. Impact of health educational program on menstrual beliefs and practices of adolescent Egyptian girls at secondary technical nursing school. *Life Sci J* 2013;10:335-45.
14. Manjula R, Kashinakunti SV, Geethalakshmi R G, Sangam D K. An educational intervention study on adolescent reproductive health among pre-university girls in Davangere district, South India. *Ann Trop Med Public Health* 2012;5:185-9.
15. Setyowati S, Rizkia M, Ungsianik T. Improving Female Adolescents' Knowledge, Emotional Response, and Attitude toward Menarche following Implementation of Menarcheal Preparation Reproductive Health Education. *Asian/Pacific Island Nursing Journal*. 2019;4(2):84-91.
16. Rao RS, Lena A, Nair N S, Kamath V, Kamath A. Effectiveness of reproductive health education among rural adolescent girls: A school based intervention study in Udupi Taluk, Karnataka. *Indian J Med Sci* 2008;62:439-43.
17. Nemade D, Anjanaya S, Gujar R. Impact of health education on knowledge and practices about menstruation among adolescent school girls of Kalamboi, Navi-Mumbai. *Health Popul Perspect Issues*. 2009 Oct;32(4):167-75.
18. Jogdand K, Yerpude P. A community based study on menstrual hygiene among adolescent girls. *Indian J Matern Child Health* 2011;13:1-6.
19. Arora A, Mittal A, Pathania D, Singh J, Mehta C, Bunger R. Impact of health education on knowledge and practices about menstruation among adolescent school girls of rural part of district Ambala, Haryana. *Indian Journal of Community Health*. 2013 Dec 31;25(4):492-7.
20. Majumdar Ratna & Ganguly S.K (2000). A study of adolescent girls in Pune, Health and Population Prospective and Issue, 23(2), 95-104 & 24(4).
21. Gupta Neeru, Mathur AK, Singh MP, Saxena NC. Reproductive Health Awareness of school going unmarried rural adolescents. *Indian J Pediatr* 2004; 17; 797-801.