International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2025: 7.089

Effectiveness of a Self-Instructional Module on Knowledge Regarding Comprehensive Sexuality Education among Adolescents in a Selected Secondary School of Maharashtra, India

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Abstract: ***Comprehensive sexuality education (CSE) provides adolescents with age-appropriate knowledge and skills related to the body, puberty, relationships, rights, sexual and reproductive health, and protection from violence. The present study evaluated whether a self-instructional module could improve adolescents' knowledge regarding CSE. An evaluative, one-group pre-test post-test pre-experimental design was used among 80 adolescents studying at Navnirman High School, Ratnagiri. Participants were selected using non-probability sampling. A structured 30-item knowledge questionnaire was used. The questionnaire and self-instructional module were validated by six experts; reliability was established by split-half method (r=0.81). A pre-test was followed by administration of the self-instructional module, and the post-test was conducted eight days later. Descriptive statistics, paired t-test and chi-square test were used. The mean knowledge score increased from 12.38 (SD 5.98) in the pre-test to 21.23 (SD 12.58) in the post-test. The mean gain was 8.85 points and the reported paired t-value was 27.16, exceeding the table value of 1.990. In the pre-test, 2.5% had good, 70% average and 27.5% poor knowledge; after the intervention, 56.25% had good, 43.75% average and none had poor knowledge. Significant associations with pre-test knowledge were observed for mother's education, father's education, type of family and area of residence. The self-instructional module was effective in improving knowledge regarding comprehensive sexuality education among the adolescents studied. School-based, age-appropriate educational resources may be a useful nursing and health-education strategy.***

Keywords: adolescents, comprehensive sexuality education, self-instructional module, knowledge, school health, sexual and reproductive health

1. Introduction

Adolescence is a period of substantial physical, psychological and social development during which young people begin to make increasingly important decisions concerning relationships, sexuality and health. Inadequate or inaccurate information can leave adolescents vulnerable to misconceptions, coercion, sexually transmitted infections, unintended pregnancy and sexual violence.

Comprehensive sexuality education extends beyond biological information. It can include anatomy and physiology, puberty, healthy relationships, consent, values and rights, gender and sexuality, sexual health, and prevention of interpersonal violence. The underlying dissertation notes that India has had school-based adolescent health and sexuality-related initiatives, including the Adolescent Education Program and later life-skills approaches, but implementation has faced challenges.

A self-instructional module can provide structured, accessible information that learners can review at their own pace. The present study was undertaken to determine whether such a module could improve knowledge regarding CSE among adolescents in a selected secondary school in Ratnagiri.

Problem Statement

"A study to assess the effectiveness of a Self-Instructional Module on Knowledge Regarding Comprehensive Sexuality Education among Adolescents in a Selected Secondary School of Ratnagiri, Maharashtra"

2. Objectives

- To assess the existing level of knowledge regarding comprehensive sexuality education among adolescents.
- To evaluate the effectiveness of the self-instructional module by comparing pre-test and post-test knowledge scores.
- To determine the association between pre-test knowledge scores and selected socio-demographic variables.

3. 3. Hypothesis

H0: There is no significant difference between pre-test and post-test knowledge scores regarding comprehensive sexuality education.
H1: There is a significant difference between pre-test and post-test knowledge scores regarding comprehensive sexuality education.
H2: There is a significant association between pre-test knowledge scores and selected socio-demographic variables.

4. Materials and Methods

Study design and setting: An evaluative approach using a one-group pre-test post-test pre-experimental design was adopted. The study was conducted at Navnirman High

School, Ratnagiri, Maharashtra. The conceptual framework was based on Ludwig von Bertalanffy's General System Theory.

Sample and sampling: The sample consisted of 80 adolescents who met the inclusion criteria. Non-probability sampling was used.

Variables: The independent variable was the self-instructional module on comprehensive sexuality education, and the dependent variable was adolescents' knowledge regarding CSE.

Data collection: The main study was conducted from 26 December 2023 to 4 January 2024. Following the pre-test, the self-instructional module was administered and the post-test was conducted eight days later.

Research tool: A structured knowledge questionnaire containing 30 items was used. The tool and self-instructional module were validated by six experts. Reliability was assessed by the split-half method using Karl Pearson's correlation coefficient and was reported as r=0.81.

Knowledge scoring.

Sr. No.	Score	Category of knowledge
1.	0 -10	Poor knowledge
2.	11- 20	Average knowledge
3.	21 - 30	Good knowledge

Data analysis: Descriptive statistics were used for frequency, percentage, mean and standard deviation. A paired t-test was used to compare pre-test and post-test scores. Chi-square tests were used to examine associations between pre-test knowledge and selected socio-demographic variables.

5. Results

5.1 Socio-demographic characteristics

Among the 80 adolescents, 36 (45%) were aged 14 years, 31 (38.75%) were aged 15 years, 11 (13.75%) were aged 16 years or above and 2 (2.5%) were aged 13 years. There were 43 (53.75%) males and 37 (46.25%) females.

Table 1: Socio-demographic characteristics of the adolescent participants

S. No.	Characteristic	Category	n (%)
01	Mother's education	Primary	9 (11.25%)
		Secondary	20 (25.00%)
		Higher secondary	18 (22.50%)
		Diploma/Graduation	29 (36.25%)
		Post-graduation	4 (5.00%)
02	Father's education	Secondary	21 (26.25%)
		Higher secondary	21 (26.25%)
		Diploma/Graduation	20 (25.00%)
		Post-graduation	18 (22.50%)
03	Type of family	Joint	29 (36.25%)
		Nuclear	47 (58.75%)
		Extended	4 (5.00%)
04	Religion	Hindu	68 (85.00%)
		Muslim	8 (10.00%)
		Buddhist	4 (5.00%)
05	Residence	Urban	53 (66.25%)
		Rural	27 (33.75%)

5.2 Previous knowledge and sources of information

Sixty-eight adolescents (85%) reported previous exposure or knowledge regarding sexuality education, while 12 (15%) reported no previous knowledge. The most common reported source was newspapers/books (37.5%), followed by mass media (30%). Parents were reported by 5%, peer group by 11.25%, other sources by 5%, and 8.75% reported no information. No participant reported seminars/webinars as a source.

5.3 Pre-test and post-test knowledge levels

Table 2: Distribution of adolescents by pre-test and post-test knowledge level.

Knowledge level	Score range	Pre-test n (%)	Post-test n (%)
Poor	0–10	22 (27.50%)	0 (0%)
Average	11–20	56 (70.00%)	35 (43.75%)
Good	21–30	2 (2.50%)	45 (56.25%)
Total		80 (100%)	80 (100%)

The distribution shifted markedly after the intervention: the proportion with good knowledge increased from 2.5% to 56.25%, while poor knowledge decreased from 27.5% to 0%.

5.4 Area-wise knowledge scores

Table 3: Area-wise pre-test and post-test knowledge scores

Knowledge area	Max	Pre-test Mean ± SD	Pre-test %	Post-test Mean ± SD	Post-test %
Basic knowledge of human body and reproductive system	8	3.28 ± 1.73	41.00	5.61 ± 1.50	70.12
Puberty and adolescence	6	3.025 ± 1.15	50.41	4.425 ± 1.14	73.75
Comprehensive sexuality education	11	4.10 ± 2.11	37.27	7.80 ± 1.98	70.90
Relationships, values, rights, culture and sexuality	5	1.975 ± 0.99	39.50	3.40 ± 7.96	68.00
Total	30	12.38 ± 5.98	42.04	21.23 ± 12.58	70.69

All reported knowledge domains showed an increase in mean score following the self-instructional module. The largest absolute gain was reported in the CSE domain (3.70 points), followed by basic knowledge of the human body and reproductive system (2.33 points).

5.5 Effectiveness of the self-instructional module

Table 4: Paired comparison of pre-test and post-test knowledge scores

Measure	Value
Pre-test mean	12.38
Post-test mean	21.23
Mean difference	8.85
SD of difference	6.60
Standard error of mean difference	0.338
Reported paired t-value	27.16
Critical/table t-value	1.990
Decision	Statistically significant; H0 rejected

The reported paired t-value of 27.16 was substantially greater than the table value of 1.990. The difference was therefore statistically significant at the study's stated 0.05 level, supporting the effectiveness of the self-instructional module. The mean score increased by 8.85 points, corresponding to an increase from 42.04% of the maximum score at pre-test to 70.69% at post-test.

5.6 Association with socio-demographic variables

Table 5: Association between pre-test knowledge and selected socio-demographic variables.

Variable	df	χ^2 calculated	χ^2 table	Significance
Age	6	7.08	12.59	Not significant
Gender	2	1.84	5.99	Not significant
Educational status of adolescent	—	Cannot compute	—	Not tested
Mother's education	8	20.31	15.51	Significant
Father's education	6	15.12	12.59	Significant
Type of family	4	14.60	9.49	Significant
Religion	4	8.78	9.49	Not significant
Area of residence	2	6.48	5.99	Significant
Previous knowledge	2	3.75	5.99	Not significant
Source of information	12	8.607	21.03	Not significant

At the 0.05 level, significant associations were reported for mother's education, father's education, type of family and area of residence. No significant associations were reported for age, gender, religion, previous knowledge or source of information.

6. Discussion

The present study demonstrated a substantial improvement in adolescents' knowledge regarding comprehensive sexuality education following administration of the self-instructional module. The mean score increased from 12.38 to 21.23, with a mean gain of 8.85 points. The reported paired t-value of 27.16 exceeded the critical value of 1.990, indicating a statistically significant improvement.

The categorical findings reinforce the magnitude of improvement. Before the intervention, only 2.5% of participants had good knowledge and 27.5% had poor knowledge. After the intervention, 56.25% had good knowledge and no participant remained in the poor-knowledge category.

The findings are consistent with the broader evidence summarized in the dissertation. A 2023 quasi-experimental study in China reported significantly higher sexuality-related knowledge and skill scores among students receiving a standardized CSE curriculum than among controls. The dissertation also cites evidence that school-based sexuality education can address healthy relationships, sexual diversity, violence prevention and other dimensions of sexual health.

The association analysis suggests that family educational and social context may influence baseline knowledge. Significant associations were observed with parental education, type of family and residence, whereas age, gender, religion, previous knowledge and source of information were not statistically significant in this sample. These findings should be interpreted cautiously because the study used a single-school sample and a non-probability sampling approach.

7. Conclusion

The study concludes that the self-instructional module was effective in improving knowledge regarding comprehensive sexuality education among the adolescents studied. The marked increase in mean knowledge scores and the statistically significant paired t-test support the use of structured, age-appropriate educational material as one component of school health education.

8. Implications for Nursing

1) **Nursing practice**: School and community health nurses can contribute to age-appropriate CSE and sexual and reproductive health education and can use structured self-learning materials as supplementary resources.
2) **Nursing education:** Nursing curricula and student-led school health activities can include evidence-based, culturally appropriate CSE content and communication skills.
3) **Nursing administration**: Nurse administrators can support staff training, health-education programs and collaboration with schools, teachers and parents.
4) **Nursing research**: Larger controlled studies and studies assessing attitudes, skills and practices are needed to determine whether knowledge gains are sustained and translate into healthier behaviours.

9. Limitations

The study was limited to adolescents from a selected secondary school in Ratnagiri. The sample was small and selected using a non-probability approach, limiting generalizability. The study used a researcher-developed knowledge tool rather than a standardized instrument. It was

time-bound and assessed knowledge only. No control group was included.

10. Recommendations

- Replicate the study with a larger sample and probability sampling where feasible.
- Conduct controlled or randomized studies to strengthen causal inference.
- Replicate the study in multiple urban and rural schools and in other regions.
- Assess attitudes, communication skills and practices in addition to knowledge.
- Compare different educational strategies such as self-instructional modules, group teaching, digital learning and computer-assisted instruction.

Declaration

Funding: No external funding was received for this study.

Conflict of interest: The author declares no conflict of interest.

Data availability: Data are available from the corresponding author on reasonable request, subject to confidentiality requirements.

Author contributions: The author conducted the study, data collection and analysis, and manuscript preparation under the guidance of the research guide.

Acknowledgements: The author sincerely thanks the research guide, institutional and school authorities, participating adolescents, and all persons who supported the study.

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