

A Study TO Assess THE Effectiveness OF A Community-Based Health Literacy Program AMONG Adolescents IN Selected Schools AT Baroda: A Mixed-Methods Study

Het Panchal¹, Prof. Kartika s²

¹M.Sc. Nursing Student, Department of Community Health Nursing, Parul Institute of Nursing, Parul University, Vadodara, Gujarat. Email: panchalhet001@gmail.com / ORCID: 0009-0006-2914-4210
²Professor, Department of Community Health Nursing, Parul Institute of Nursing, Parul University, Vadodara, Gujarat. Email: karthikasubbiah071@gmail.com / ORCID: 0009-0005-6403-3949

ABSTRACT

Background: Adolescence is a critical developmental period where health literacy plays a vital role in shaping future health behaviors. Limited evidence exists regarding structured community-based health literacy interventions among school-going adolescents in Gujarat, India.

Aim: To assess the effectiveness of a community-based health literacy program on knowledge, attitude, and practice among adolescents studying in selected schools at Baroda.

Methods: A mixed-methods study with a quasi-experimental pre-test-post-test control group design was employed. Sixty adolescents aged 13-18 years were selected through simple random sampling and allocated equally into experimental (n=15) and control (n=15) groups for the quantitative component. An additional 30 participants from the experimental group participated in semi-structured interviews for the qualitative component. The intervention comprised four weekly sessions covering reproductive and sexual health, menstrual health, mental health, and food and nutrition. Data were analyzed using descriptive and inferential statistics (SPSS version 25.0) and thematic analysis following Braun and Clarke's six-step framework.

Results: The experimental group showed a significant improvement in knowledge scores (mean difference=1.400, t=8.283, p<0.001) compared to the control group. Post-intervention, 80% of experimental group participants achieved good knowledge levels, compared to 0% at baseline. Qualitative findings revealed four major themes: improved knowledge and awareness, positive behavioral changes, increased confidence in health decision-making, and high satisfaction with the program.

Conclusion: The community-based health literacy program was highly effective in improving adolescent health literacy. Integration of such programs into routine school health services is recommended to strengthen adolescent health promotion.

Keywords: Adolescent, Health Literacy, Community-Based Program, Mixed Methods, School Health, Nursing, Health Belief Model.

INTRODUCTION

Adolescence represents a critical transitional phase in human development, marking the period between childhood and adulthood. The World Health Organization defines adolescence as the period between 10 and 19 years, encompassing the second decade of life ^[1]. In India, the National Youth Policy defines the adolescent age group as 13-19 years, reflecting cultural and contextual considerations ^[2]. India is home to approximately 207 million adolescents aged 10-19 years, representing one-fifth of the country's total population ^[2].

Health literacy has emerged as a critical determinant of adolescent health outcomes, influencing the ability to access, understand, evaluate, and apply health information for informed decision-making ^[3]. Studies indicate that adolescents have limited knowledge about reproductive health, mental health, and nutrition, with much of their understanding remaining superficial and riddled with misconceptions ^[4,5].

Community-based health literacy programs have been recognized as effective strategies for improving health awareness and promoting healthy behaviors among adolescents ^[6,7]. These programs integrate school, family, and community participation, thereby enhancing the sustainability and effectiveness of health promotion efforts ^[8]. However, limited evidence exists regarding structured community-based health literacy interventions among school-going adolescents in Gujarat, India. This study addresses this gap by evaluating the effectiveness of a community-based health literacy program among adolescents in selected schools at Baroda.

Conceptual Framework: This study was guided by the Health Belief Model (HBM), which comprises six constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy, and cues to action ^[9,10]. The HBM provided a theoretical foundation for understanding the cognitive processes underlying adolescent health behavior change.

MATERIALS AND METHODS

Study Design and Setting

A mixed-methods design was employed, incorporating a quasi-experimental pre-test-post-test control group design for the quantitative component and a descriptive qualitative design for the qualitative component ^[11]. The study was conducted in two government secondary schools in rural areas of Vadodara district, Gujarat, India.

Participants and Sampling

The target population comprised adolescents aged 13-18 years studying in selected schools. Simple random sampling (lottery method) was used to select participants, who were subsequently allocated randomly into experimental and control groups.

Inclusion Criteria:

- Adolescents aged 13-18 years
- Ability to read and write in Gujarati, Hindi, or English
- Willingness to participate

Exclusion Criteria:

- Unavailability during data collection
- Diagnosed chronic illness affecting participation

Sample Size:

- Quantitative component: n=30 (15 experimental, 15 control)
- Qualitative component: n=30 (from experimental group)
- Total: n=60 participants

Data Collection Tools

1. **Socio-Demographic Proforma:** Collected information on age, gender, type of family, place of location, religion, parental occupation, dietary habits, physical activity, and sleeping hours.
2. **Self-Structured Knowledge Questionnaire:** Comprised 50 items covering four domains:
 - Reproductive and sexual health (12 items)
 - Menstrual health (13 items)
 - Mental health (12 items)
 - Food and nutrition (13 items)Each correct response scored one mark. Knowledge levels were categorized as: Good (34-50), Average (17-33), and Poor (0-16).
3. **Semi-Structured Interview Guide:** Open-ended questions exploring participants' experiences, perceptions, and behavioral changes ^[12].

Validity and Reliability

Content validity was established through expert review by five experts from community health nursing, adolescent health, and medical education. The Content Validity Index was calculated, and modifications were made based on expert recommendations.

Reliability was established using the split-half method, yielding a reliability coefficient of $r=0.9149$, indicating high internal consistency.

Intervention

The community-based health literacy program was implemented in the experimental group over four weeks (one session per week) ^[13]:

Week	Topic	Duration	Teaching Methods
------	-------	----------	------------------

1	Reproductive and Sexual Health	45-60 min	Interactive lectures, group discussions, AV aids
2	Menstrual Health	45-60 min	Demonstrations, charts, group discussions
3	Mental Health	45-60 min	Role-play, group discussions, videos
4	Food and Nutrition	45-60 min	Demonstrations, charts, question-answer sessions

The control group received routine school health education.

Data Collection Procedure

1. **Pre-test:** Knowledge questionnaire administered to both groups
2. **Intervention:** Community-based program implemented in experimental group
3. **Post-test:** Questionnaire readministered one week post-intervention
4. **Qualitative interviews:** Semi-structured interviews conducted with 30 participants from the experimental group

Ethical Considerations

Ethical approval was obtained from the Institutional Ethical Committee for Human Research (PUIECHR/PIMSR/00/081734/6107). Written informed consent was obtained from participants and their parents/guardians. Confidentiality and the right to withdraw were maintained throughout ^[14].

Data Analysis

- **Quantitative Analysis (SPSS version 25.0):**
 - Descriptive statistics (frequency, percentage, mean, standard deviation)
 - Inferential statistics (paired t-test, unpaired t-test, Chi-square test)
 - Level of significance: $p \leq 0.05$
- **Qualitative Analysis:**
 - Thematic analysis following Braun and Clarke's six-step framework [15]
 - Data transcribed verbatim, coded, and themes developed

RESULTS

A. Quantitative Findings

Table 1. Demographic Characteristics of Participants (n=30)

Demographic Variables		Control Group (n=15)		Experimental Group (n=15)	
		Frequency	Percentage %	Frequency	Percentage %
Age	13-16 Years	12	80%	12	80%
	17-19 Years	3	20%	3	20%
Gender	Male	6	40%	8	53.3%
	Female	9	60%	7	46.7%
	Other	0	0%	0	0%
Type of family	Nuclear	8	53.3%	6	40%
	Joint	7	46.7%	9	60%
	Extended	0	0%	0	0%
Place of Loation	Rural	7	46.7%	5	33.3%
	Urban	8	53.3%	10	66.7%

Religion	Hindu	13	86.7%	13	86.7%
	Muslim	1	6.7%	0	0%
	Christian	1	6.7%	2	13.3%
	Other	0	0%	0	0%

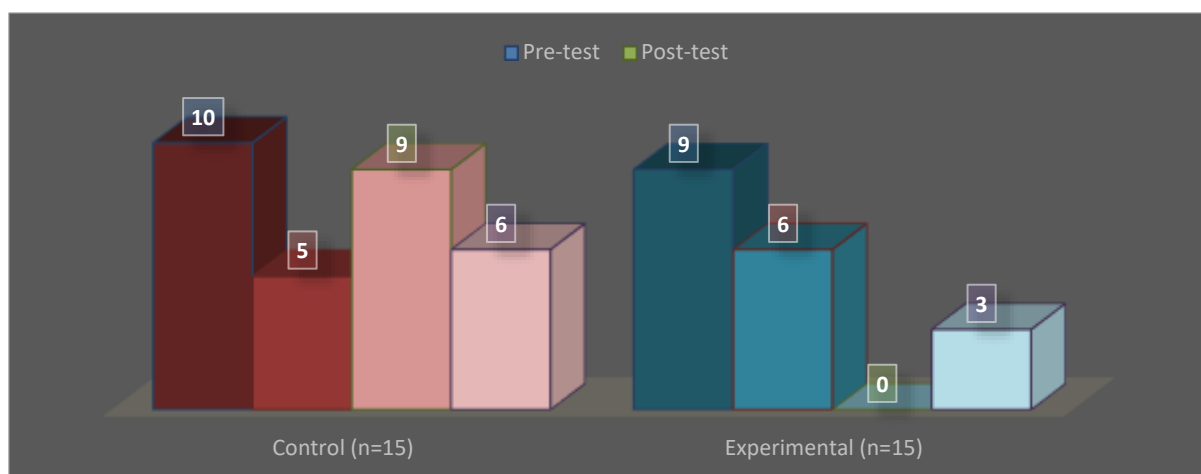
Table 2. Pre-test and Post-test Knowledge Levels

Group	Pre-test		Post-test	
	Poor	Average	Poor	Average
Control (n=15)	10 (66.7%)	5 (33.3%)	9 (60.0%)	6 (40.0%)
Experimental (n=15)	9 (60.0%)	6 (40.0%)	0 (0.0%)	3 (20.0%)

Figure 1. Comparison of Pre-test and Post-test Mean Scores

Table 3. Effectiveness of Intervention (Unpaired t-test)

Level of knowledge	Control group		Experimental group		Mean difference	't` value
	Mean	SD	Mean	SD		
Pre test	0.33	0.488	0.40	0.507	0.067	0.367
Post test	0.40	0.507	1.80	0.414	1.400	8.283



B. Association with Demographic Variables

Chi-square analysis revealed a significant association between pre-test knowledge scores and place of location ($\chi^2=0.000$, $p<0.05$). No significant association was found with age, gender, type of family, religion, parental occupation, diet pattern, physical activity, or sleeping hours.

C. Qualitative Findings: Four major themes emerged from thematic analysis

Theme 1: Improved Knowledge and Awareness

- Participants reported increased understanding of health literacy, disease prevention, and healthy living.
- "Earlier I did not know why healthy food and exercise were important. Now I understand how they help prevent diseases."

Theme 2: Positive Behavioral Changes

- Adolescents described adopting healthier lifestyle practices in hygiene, diet, physical activity, and sleep.
- "I have started eating more fruits and vegetables instead of junk food."

Theme 3: Increased Confidence in Health Decision-Making

- Participants reported feeling more confident in making informed health choices.
- "Now I can explain healthy habits to my younger brother."

Theme 4: Satisfaction with the Program

- High satisfaction was expressed with interactive teaching methods and easy-to-understand language.
- "The pictures and demonstrations made learning very easy and interesting."

DISCUSSION

The present study demonstrates that a community-based health literacy program significantly improves adolescent health literacy. The experimental group showed a remarkable improvement from 0% having good knowledge at pre-test to 80% at post-test, compared to minimal change in the control group (0% to 0%) ^[16].

This finding is consistent with previous research. Vahedian-Shahroodi et al. (2019) reported that nutrition education intervention improved health literacy from 1.75 ± 1.07 to 4.96 ± 0.96 among adolescent girls ^[17]. Similarly, Goss et al. (2022) demonstrated the effectiveness of co-design approaches in developing acceptable health literacy interventions for adolescents ^[18].

The significant association between pre-test knowledge and place of location (rural/urban) aligns with findings from a community-based study in rural Maharashtra, which reported that adolescents with education below 10th grade were more likely to have limited health literacy ^[19]. This underscores the need for targeted interventions in rural areas where adolescents may face barriers to accessing health information ^[20].

The qualitative findings revealed that participants not only gained knowledge but also adopted positive behavioral changes, consistent with studies demonstrating the effectiveness of community-based health literacy interventions in India ^[21]. The high satisfaction expressed by participants supports the value of interactive teaching methods and adolescent-friendly approaches ^[22].

Strengths of the Study:

1. Mixed-methods approach providing comprehensive insights
2. Theoretical grounding in the Health Belief Model
3. Valid and reliable tool ($r=0.9149$)
4. Community-based approach enhancing relevance and sustainability

Limitations:

1. Small sample size ($n=60$), limiting generalizability
2. Short-term follow-up without assessing long-term sustainability
3. Self-reported data subject to recall and social desirability bias
4. Single geographic area (Baroda district)

Implications for Practice:

- Nurses should integrate health literacy programs into routine school health services
- Interactive teaching methods (demonstrations, group discussions, AV aids) should be employed
- Targeted interventions are needed for rural adolescents
- Community engagement (parents, teachers, community members) should be prioritized

Implications for Research:

- Future studies with larger samples and longer follow-up periods are warranted
- Comparative studies between rural and urban populations are needed
- Research examining specific intervention components' effectiveness is recommended

CONCLUSION

The community-based health literacy program was highly effective in improving adolescent knowledge, promoting positive behavioral changes, and enhancing confidence in health decision-making. Integration of such programs into routine school health services is strongly recommended to strengthen adolescent health promotion efforts in India.

ACKNOWLEDGEMENTS

The authors express sincere gratitude to the school authorities, teachers, parents, and adolescent participants for their valuable cooperation and participation in this study.

CONFLICTS OF INTEREST

No potential conflicts of interest relevant to this article were reported.

FUNDING SOURCE

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

REFERENCES

1. World Health Organization. Adolescent health [Internet]. Geneva: WHO; 2024 [cited 2026 Aug 18]. Available from: <https://www.who.int/health-topics/adolescent-health>
2. Ministry of Health and Family Welfare, Government of India. National Adolescent Health Programme (Rashtriya Kishor Swasthya Karyakram): operational framework. New Delhi: Government of India; 2020.
3. Nutbeam D. Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century. *Health Promot Int*. 2000;15(3):259-67.
4. Jejeebhoy SJ. Adolescent sexual and reproductive behavior: a review of the evidence from India. *Soc Sci Med*. 1998;46(10):1275-90.
5. Ahmad A, Kumar R, Singh S, Gupta P. Mental health literacy related to depression and anxiety among adolescents in Delhi. *Asian J Psychiatr*. 2022;74:103176.
6. Seedaket S, Turnbull N, Phajan T, Wanchai A. Improving mental health literacy in adolescents: a systematic review of supporting interventions. *J Health Res*. 2020;34(3):245-56.
7. Belfrage SL, Husted M, Fraser SDS, Patel S, Faulkner JA. A systematic review of the effectiveness of community-based interventions aimed at improving health literacy of parents/carers of children. *Perspect Public Health*. 2025;145(1):25-31.
8. Baur C, Martinez LM, Tchangalova N, Rubin D. A review of community-based health literacy interventions. *Stud Health Technol Inform*. 2018;248:215-22.
9. Rosenstock IM. Historical origins of the health belief model. *Health Educ Monogr*. 1974;2(4):328-35.
10. Janz NK, Becker MH. The health belief model: a decade later. *Health Educ Q*. 1984;11(1):1-47.
11. Creswell JW, Plano Clark VL. Designing and conducting mixed methods research. 3rd ed. Thousand Oaks (CA): SAGE Publications; 2018.
12. Kvale S, Brinkmann S. *InterViews: learning the craft of qualitative research interviewing*. 3rd ed. Thousand Oaks (CA): SAGE Publications; 2015.
13. Choudhary M, Kavita K. Improving menstrual health literacy: effectiveness of an educational intervention among rural adolescent girls. *J Sci Res Rep*. 2025;31(5):919-27.
14. World Medical Association. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. *JAMA*. 2013;310(20):2191-4.
15. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77-101.
16. Polit DF, Beck CT. *Nursing research: generating and assessing evidence for nursing practice*. 11th ed. Philadelphia (PA): Wolters Kluwer; 2021.
17. Vahedian-Shahroodi M, Tehrani H, Esmaily H, Olyani S. Effect of education intervention on nutrition behaviors of high school female students along with promoting health literacy. *Health Educ Health Promot*. 2019;7(4):169-76.
18. Goss HR, Smith C, Hickey L, Issartel J, Morrissey J, Murrin C, et al. Using co-design to develop a health literacy intervention with socially disadvantaged adolescents. *Int J Environ Res Public Health*. 2022;19(9):4965.
19. Soni P, Tiwari R, Banerjee D, Mahajan S. Health literacy among rural adolescents in Amravati, Maharashtra: a community based cross-sectional study. *Clin Epidemiol Glob Health*. 2024;27:101589.
20. Mathias EG, Kumar S, Jacob S, George S. Community interventions to improve health literacy in India: a systematic review. *Clin Epidemiol Glob Health*. 2023;22:101289.
21. Sharma S, Akhtar F, Singh RK, Mehra S. Determinants of nutrition-related knowledge, attitude and self-efficacy among adolescents in India. *J Nutr Educ Behav*. 2019;51(5):591-9.
22. Atilola O, Ola B, Abiri G, Ogunwale A, Oshiname F. Effect of a school-based training program on depression literacy among Nigerian high school students. *Child Adolesc Psychiatry Ment Health*. 2022;16(1):15.