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Original Article

Effect of Community-Based Education on Knowledge and Prevention of Communicable Diseases Among Adolescents

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ABSTRACT

Background: Communicable diseases remain common in Pakistan, particularly where overcrowding, unsafe water, poor sanitation, and limited health literacy affect preventive behaviour. Adolescents are an important group for disease prevention because they interact across home, school, hospital, and community environments and may transfer health messages to families. Objective: To assess short-term changes in adolescents' knowledge, attitudes, and preventive practices regarding communicable diseases after a structured hospital-based community health education intervention. Methods: This quasi-experimental one-group pre-test and post-test study included 120 adolescents aged 10–19 years at a tertiary-care hospital in South Punjab, Pakistan. Participants were recruited through non-probability convenient sampling. Data were collected using a structured KAP questionnaire before the intervention and two weeks after a 30–40-minute education session using discussion, pictorial charts, local examples, and handwashing demonstration. Data were analyzed using SPSS version 26, and paired sample t-test was used for pre–post comparisons. Results: The mean age was 15.4 ± 2.1 years. Knowledge score increased from 12.6 ± 3.4 to 21.8 ± 2.7, attitude score from 18.4 ± 4.1 to 24.7 ± 3.3, practice score from 14.1 ± 3.9 to 20.9 ± 3.6, and overall KAP score from 45.1 ± 9.8 to 67.4 ± 8.2, with all comparisons showing $p < 0.001$. Good knowledge increased from 24.2% to 71.7%. Conclusion: The intervention was associated with significant short-term improvement in communicable disease-related KAP among adolescents. Keywords: Community health education; communicable diseases; adolescents; knowledge; attitude; preventive practices; South Punjab; Pakistan; quasi-experimental study.

INTRODUCTION

Communicable diseases remain a major public health concern in low- and middle-income countries, where overcrowding, unsafe water, inadequate sanitation, low health literacy, delayed care seeking, and inconsistent preventive practices continue to facilitate transmission. Respiratory infections, diarrheal diseases, tuberculosis, hepatitis, dengue, COVID-19, and other viral illnesses are preventable to a considerable extent through basic but consistently applied measures, including hand hygiene, safe drinking water, food hygiene, vaccination, cough etiquette, vector control, mask use when indicated, safe waste disposal, and early contact with health services. Despite global progress in child survival and infectious disease control, communicable diseases continue to contribute substantially to morbidity among children and adolescents, with enteric infections, lower respiratory infections, malaria,

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tuberculosis, and HIV remaining important causes of preventable disease burden across younger age groups (1).

Adolescence is a strategically important period for communicable disease prevention because adolescents interact across multiple environments, including homes, schools, colleges, markets, playgrounds, hospitals, and social gatherings. Their mobility increases exposure risk, but it also creates an opportunity for health promotion because adolescents can transfer accurate prevention messages to family members and peers. The Lancet Commission on adolescent health emphasized that health behaviours established during adolescence often influence adult health trajectories, making this stage important not only for immediate disease prevention but also for long-term public health gains (2). Recent international calls for renewed adolescent health investment further support the need to include adolescents in preventive health programs rather than limiting communicable disease education to early childhood or outbreak periods (3).

Health education is a central component of communicable disease prevention because awareness alone does not always translate into correct preventive behaviour. Community-led and community-oriented strategies can improve uptake of disease prevention practices, particularly when messages are delivered in familiar settings, in plain language, and through trusted health or community personnel (4). School- and student-focused studies have shown that structured health education can improve knowledge and preventive behaviours related to infectious diseases, especially when education combines explanation, visual material, discussion, and practical demonstration (5,6). Evidence from hygiene-promotion studies in Pakistan and other settings also suggests that educational interventions are more effective when they address both knowledge gaps and contextual barriers such as access to soap, water, and supportive environments (7,8).

In Pakistan, the need for adolescent-focused communicable disease education is particularly relevant because many communities continue to face water, sanitation, hygiene, and vector-control challenges. Studies among schoolchildren and adolescents have identified gaps in hygiene practices and infection-related knowledge, including handwashing behaviour and intestinal parasite prevention (9–12). Hand hygiene interventions have been associated with improved handwashing knowledge and performance among school-aged children, while systematic reviews have shown that hand hygiene promotion can reduce illness absence and infectious disease transmission in educational and community settings (13–16). These findings indicate that health education should move beyond disease awareness and should emphasize practical, repeatable prevention behaviours.

Disease-specific evidence from Pakistan further demonstrates that general awareness does not ensure adequate prevention. Dengue-related studies from Karachi have shown that although many people have heard about dengue, sufficient knowledge and household preventive practices remain variable, and preventive behaviour is influenced by knowledge, perceived risk, and health beliefs (17,18). Similarly, studies conducted during the COVID-19 pandemic among students and general populations in Pakistan reported mixed levels of knowledge, attitudes, and preventive practices, suggesting that access to information alone may be insufficient when messages are inconsistent, misunderstood, or not linked to daily behaviour (19–23). A recent adolescent-focused study in Pakistan also identified the need for targeted educational interventions to strengthen knowledge, attitudes, and prevention practices regarding infectious diseases among younger populations (24).

Although previous studies have examined hygiene education, dengue awareness, COVID-19-related knowledge, and school-based infectious disease education, evidence remains limited on integrated communicable disease prevention education among adolescents attending tertiary-care hospitals in South Punjab. This setting is important because tertiary hospitals receive patients and attendants from rural, semi-urban, and urban communities, including adolescents who may not be consistently reached through school-based programs. A hospital-based, community-oriented education session may therefore provide an accessible opportunity to improve adolescent knowledge and reinforce practical prevention

behaviours related to common infections such as tuberculosis, hepatitis, dengue, respiratory infections, and diarrheal diseases.

The present quasi-experimental study was designed to assess whether a structured, hospital-based community health education intervention was associated with short-term improvement in adolescents' knowledge, attitudes, and preventive practices regarding communicable diseases. The study specifically compared pre-intervention and two-week post-intervention KAP scores and identified baseline areas where adolescents had the weakest understanding of communicable disease prevention.

MATERIALS AND METHODS

This quasi-experimental study used a one-group pre-test and post-test design to assess short-term changes in adolescents' knowledge, attitudes, and preventive practices regarding communicable diseases after a structured health education intervention. The design was selected because the intervention was delivered in a real hospital-community setting where randomization and a parallel control group were not feasible. Baseline assessment was conducted before the intervention, and the same participants were reassessed two weeks after the educational session to measure within-participant change in KAP scores.

The study was conducted at a tertiary-care hospital in South Punjab, Pakistan, over a three-month period. During the first month, administrative permission was obtained, the questionnaire was prepared and pre-tested, and baseline data collection was initiated. During the second month, health education sessions were delivered in small groups. During the third month, post-intervention data were collected and entered for analysis. The hospital receives patients and attendants from nearby rural, semi-urban, and urban communities; therefore, it provided access to adolescents from diverse community backgrounds. The education sessions were conducted in a quiet area of the outpatient department and hospital community health section to allow participants to sit comfortably and receive the intervention without avoidable interruption.

The study population comprised adolescents aged 10 to 19 years who were present in the hospital during the data collection period as patients, attendants, family members of admitted patients, or visitors to the outpatient department for minor health-related concerns. Adolescents of both genders were eligible if they could understand Urdu or the local language, were able to respond to the questionnaire, and were willing to participate. Participants below 18 years were included after parental or guardian consent and adolescent assent. Adolescents who were seriously ill, unwilling to participate, unable to complete both pre-test and post-test assessments, or had a mental, cognitive, or communication problem that prevented reliable questionnaire response were excluded.

A total of 120 adolescents were recruited using non-probability convenient sampling. Eligible adolescents were approached during the data collection period, the study purpose was explained in plain language, and participation was kept voluntary. The pragmatic sample size was determined according to available time, resources, and the expected flow of eligible adolescents in the hospital setting. Recruitment continued until the planned sample size was completed. All enrolled participants completed both baseline and two-week post-intervention assessments and were included in the final analysis.

Data were collected using a structured questionnaire developed after reviewing relevant literature and commonly recommended communicable disease prevention measures. The questionnaire was prepared in simple Urdu and English to support comprehension among adolescents with different educational backgrounds. It included socio-demographic information and three KAP domains. The socio-demographic section recorded age, gender, education level, residence, family type, and main source of health information. The knowledge section assessed understanding of communicable diseases, transmission routes, symptoms, and prevention. The attitude section assessed beliefs regarding hand

hygiene, vaccination, early treatment, avoiding close contact during illness, and preventability of infections. The practice section assessed self-reported preventive behaviours, including handwashing, safe drinking water, mask use when required, mosquito-control behaviour, and cough etiquette.

The questionnaire generated separate knowledge, attitude, practice, and overall KAP scores. The possible score range was 0–25 for knowledge, 0–30 for attitude, 0–25 for practice, and 0–80 for the overall KAP score. Knowledge responses were coded according to correctness, while attitude and practice responses were coded into domain scores according to the structured response options used in the questionnaire. Higher scores indicated better knowledge, more favourable preventive attitudes, and stronger self-reported preventive practices. The questionnaire was reviewed by public health and nursing faculty members for content validity, and their feedback was used to improve item wording, sequence, and clarity. A pre-test was conducted among 10 adolescents who were not included in the final study. After pre-testing, difficult words and unclear questions were simplified.

Data collection was completed in two phases. In the first phase, eligible participants were approached in the hospital setting, privacy was maintained as far as possible, and baseline data were collected using the structured questionnaire. Participants who had difficulty reading were assisted by the researcher, who read the questions aloud in a neutral manner without prompting answers. After completion of the pre-test, participants attended the educational intervention. The intervention was delivered in small groups of approximately 10 to 15 participants and lasted 30 to 40 minutes. The session used plain-language instruction and focused on the meaning of communicable diseases, common routes of spread, hand hygiene, safe water, food hygiene, dengue prevention, cough etiquette, mask use when indicated, vaccination, tuberculosis awareness, hepatitis prevention, and the importance of early medical advice.

The educational intervention used a short lecture, group discussion, posters, pictorial charts, local examples, and handwashing demonstration. Local examples included mosquito breeding in standing water, spread of flu in crowded rooms, contamination through unwashed hands, and the importance of washing hands before eating and after toilet use. Participants were encouraged to ask questions, and key messages were repeated at the end of the session. A short printed leaflet was provided where possible to reinforce the main prevention messages. To improve intervention consistency, the same core content areas and teaching methods were used across groups.

The post-intervention assessment was conducted two weeks after the educational session using the same questionnaire. Participants were followed during hospital revisit or through available hospital community contact mechanisms. The two-week interval was selected to assess short-term retention and early self-reported change after the education session while minimizing excessive loss to follow-up. Participants who completed both assessments were included in the final analysis.

Several steps were used to reduce bias and improve data quality. The questionnaire was pre-tested before final use, and wording was simplified to reduce comprehension-related measurement error. The same questionnaire was used at baseline and follow-up to maintain measurement consistency. Questions were read in a neutral manner when assistance was required. Data were checked for completeness before entry, and responses were reviewed for consistency during data entry. The study design, however, did not include a control group; therefore, the findings were interpreted as short-term within-participant improvements associated with the intervention rather than definitive causal effects. Potential sources of bias included testing effect from repeated questionnaire exposure, social desirability in self-reported practices, short follow-up duration, and selection bias related to convenient sampling from a single tertiary-care hospital.

Data were entered and analyzed using SPSS version 26. Frequencies and percentages were calculated for categorical variables, including gender, residence, education level, and source of health information. Mean and standard deviation were calculated for continuous variables and domain scores. Pre-test and post-test knowledge, attitude, practice, and overall KAP scores were compared using paired sample t-test

because the same participants were assessed before and after the intervention. A p-value less than 0.05 was considered statistically significant. Missing data handling was based on completeness of paired responses; only participants with both pre-test and post-test assessments were included in the final paired analysis. Ethical safeguards included voluntary participation, informed consent from parents or guardians for participants below 18 years, assent from adolescent participants, confidentiality of responses, and use of collected data only for research purposes.

RESULTS

A total of 120 adolescents were enrolled in the study, and all completed both the baseline pre-test and the two-week post-intervention assessment. The age of participants ranged from 10 to 19 years, with a mean age of 15.4 ± 2.1 years. Most participants belonged to rural or semi-urban areas, and males were slightly more represented than females.

Table 1. Socio-Demographic Characteristics of Study Participants, n = 120

Variable	Category	n	%
Age group	10–13 years	28	23.3
	14–16 years	54	45.0
	17–19 years	38	31.7
Gender	Male	66	55.0
	Female	54	45.0
Residence	Rural	58	48.3
	Semi-urban	39	32.5
	Urban	23	19.2
Education level	Primary	18	15.0
	Middle	35	29.2
	Matric	44	36.7
	Intermediate	23	19.2
Main source of health information	Family	31	25.8
	School/college	27	22.5
	Social media	38	31.7
	Health worker	24	20.0

Participants were most commonly in the 14–16-year age group, representing 54 adolescents (45.0%), followed by 17–19 years in 38 participants (31.7%) and 10–13 years in 28 participants (23.3%). Males accounted for 66 participants (55.0%), while females accounted for 54 participants (45.0%). Most participants were from rural areas (48.3%) or semi-urban areas (32.5%), whereas 19.2% were from urban areas. The most frequent education level was matric (36.7%), followed by middle education (29.2%). Social media was the most commonly reported source of health information (31.7%), followed by family (25.8%), school or college (22.5%), and health workers (20.0%).

Before the intervention, many adolescents had general awareness of common communicable diseases, but detailed knowledge of transmission routes and prevention practices was limited. After the structured health education session, improvement was observed across all KAP domains.

Table 2. Pre–Post Comparison of Knowledge, Attitude, Practice, and Overall KAP Scores

Domain	Total Score	Pre-Test Mean ± SD	Post-Test Mean ± SD	Mean Difference	p-value
Knowledge	25	12.6 ± 3.4	21.8 ± 2.7	9.2	<0.001
Attitude	30	18.4 ± 4.1	24.7 ± 3.3	6.3	<0.001
Practice	25	14.1 ± 3.9	20.9 ± 3.6	6.8	<0.001
Overall KAP score	80	45.1 ± 9.8	67.4 ± 8.2	22.3	<0.001

SD: standard deviation; KAP: knowledge, attitude, and practice. Paired pre–post comparison was performed using paired sample t-test.

The mean knowledge score increased from 12.6 ± 3.4 at baseline to 21.8 ± 2.7 after the intervention, with a mean increase of 9.2 points. The attitude score increased from 18.4 ± 4.1 to 24.7 ± 3.3, showing a mean

increase of 6.3 points. The practice score increased from 14.1 ± 3.9 to 20.9 ± 3.6, with a mean increase of 6.8 points. The overall KAP score increased from 45.1 ± 9.8 before the intervention to 67.4 ± 8.2 after the intervention, with a mean increase of 22.3 points. All domain-level pre–post comparisons had p-values less than 0.001.

Knowledge category distribution also improved after the intervention. Before the health education session, 37 participants were in the poor knowledge category and 29 were in the good knowledge category. After the intervention, the number of participants with poor knowledge decreased to 6, while the number with good knowledge increased to 86.

Table 3. Distribution of Knowledge Categories Before and After the Educational Intervention

Knowledge Category	Pre-Test n	Pre-Test %	Post-Test n	Post-Test %
Poor	37	30.8	6	5.0
Moderate	54	45.0	28	23.3
Good	29	24.2	86	71.7

The proportion of participants with poor knowledge decreased from 30.8% at baseline to 5.0% after the intervention. Moderate knowledge decreased from 45.0% to 23.3%, while good knowledge increased from 24.2% to 71.7%. This shift indicates that the largest movement occurred from poor and moderate knowledge categories toward the good knowledge category after the educational session.

The weakest baseline knowledge areas reported in the manuscript were tuberculosis transmission, hepatitis prevention, dengue breeding sites, cough etiquette, and correct handwashing steps. Quantitative pre–post values were available for tuberculosis transmission, hepatitis prevention, and dengue breeding sites.

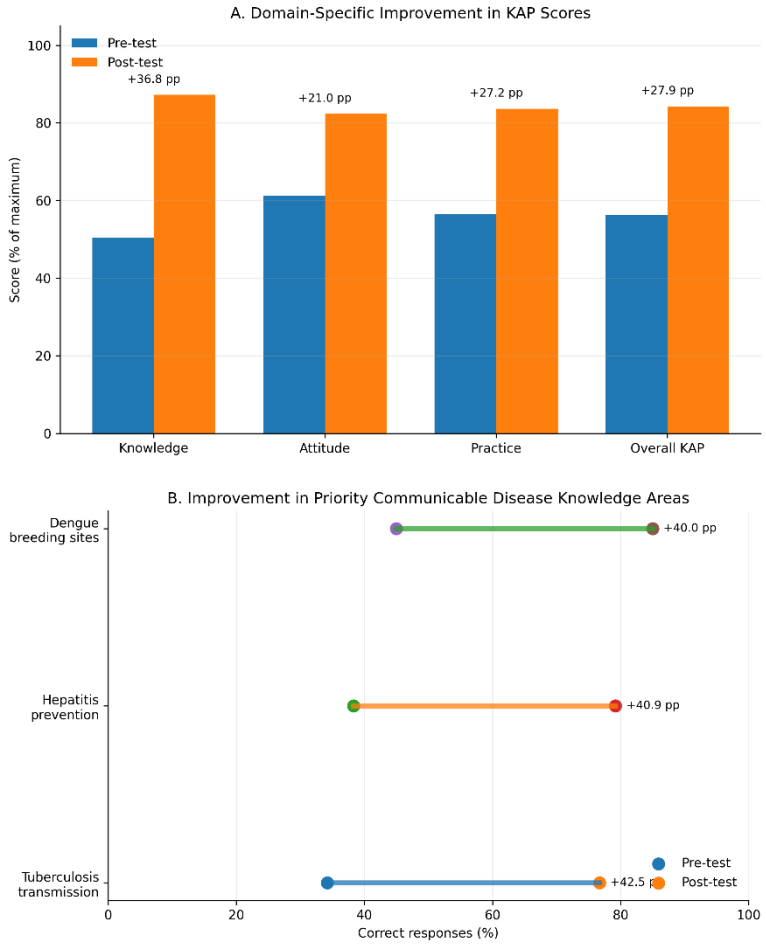

Figure 1. The panelled figure shows short-term improvement after the educational intervention among 120 adolescents. Panel A presents domain-specific KAP scores standardized as percentage of maximum possible score, with knowledge increasing from

50.4% to 87.2%, attitude from 61.3% to 82.3%, practice from 56.4% to 83.6%, and overall KAP from 56.4% to 84.3%. Panel B shows improvement in priority weak baseline knowledge areas, with correct responses increasing by 42.5 percentage points for tuberculosis transmission, 40.9 percentage points for hepatitis prevention, and 40.0 percentage points for dengue breeding sites. These patterns indicate broad improvement across general KAP domains and targeted disease-specific prevention knowledge after the health education session.

Correct responses regarding tuberculosis transmission increased from 34.2% before the intervention to 76.7% after the intervention, representing a 42.5 percentage-point increase. Correct knowledge of hepatitis prevention increased from 38.3% to 79.2%, and correct knowledge of dengue breeding sites increased from 45.0% to 85.0%. These findings show that the educational session was associated with marked short-term improvement in disease-specific prevention knowledge, particularly in areas that were weak at baseline.

Table 4. Correct Responses in Selected Weak Baseline Knowledge Areas Before and After the Educational Intervention

Knowledge Area	Pre-Test Correct %	Post-Test Correct %	Percentage-Point Change
Tuberculosis transmission	34.2	76.7	42.5
Hepatitis prevention	38.3	79.2	40.9
Dengue breeding sites	45.0	85.0	40.0

Overall, the results indicate consistent improvement in knowledge, attitude, practice, and overall KAP scores two weeks after the structured educational intervention. The greatest numerical gain was observed in knowledge, while attitude and self-reported preventive practice also improved. The findings support the usefulness of plain-language, practical, and locally contextualized health education for improving short-term communicable disease prevention awareness among adolescents attending a tertiary-care hospital setting.

DISCUSSION

The present quasi-experimental study demonstrated substantial short-term improvement in adolescents' knowledge, attitudes, and preventive practices regarding communicable diseases after a structured health education intervention delivered in a tertiary-care hospital setting. The overall KAP score increased from 45.1 ± 9.8 at baseline to 67.4 ± 8.2 two weeks after the intervention, while domain-specific gains were also observed in knowledge, attitude, and practice scores. These findings suggest that plain-language, locally contextualized, and demonstration-based health education can improve communicable disease prevention awareness among adolescents, particularly when the intervention addresses infections that are common and recognizable in the local environment.

The largest improvement was observed in knowledge, with the mean score increasing from 12.6 ± 3.4 to 21.8 ± 2.7. This finding indicates that many adolescents had modifiable baseline knowledge gaps rather than fixed misconceptions. The shift in knowledge categories further supports this interpretation, as the proportion of participants with good knowledge increased from 24.2% before the intervention to 71.7% after the intervention, while poor knowledge decreased from 30.8% to 5.0%. Such improvement is important because adolescents are frequently exposed to infection-related information through family, school, social media, and health workers, but this information may be incomplete, inconsistent, or not translated into specific prevention actions. Evidence from Pakistani population studies during COVID-19 similarly showed that knowledge, attitudes, and practices varied across groups, highlighting the continuing need for targeted health education rather than reliance on passive information exposure alone (25).

The improvement in attitude score from 18.4 ± 4.1 to 24.7 ± 3.3 suggests that the intervention did not only increase factual knowledge but also strengthened participants' beliefs regarding the preventability of communicable diseases. This is relevant because prevention behaviour depends on perceived susceptibility, perceived seriousness, confidence in preventive action, and social acceptability of health practices. International studies conducted among university students and social media users during COVID-19 showed that knowledge and attitudes were not always uniformly reflected in preventive

behaviour, and that context, risk perception, and information sources influenced adherence to preventive recommendations (26–28). In the present study, the use of local examples, pictorial material, and discussion may have helped participants connect disease transmission with practical daily behaviours, including handwashing, cough etiquette, safe water use, and mosquito control.

The practice score also improved from 14.1 ± 3.9 to 20.9 ± 3.6, although practice change remained slightly smaller than knowledge gain. This pattern is expected because behavioural change is usually more difficult than knowledge acquisition. Adolescents may understand the importance of hand hygiene, safe water, mask use when indicated, and dengue prevention, but regular practice may still depend on household habits, availability of soap and clean water, school and community facilities, and family-level reinforcement. The findings therefore support the role of educational sessions as an important first step, while also indicating that repeated reinforcement and supportive environmental conditions are needed to sustain preventive practices beyond short-term follow-up.

The disease-specific findings are particularly relevant for public health planning in Pakistan. Baseline understanding was weakest for tuberculosis transmission, hepatitis prevention, dengue breeding sites, cough etiquette, and correct handwashing steps. Correct responses regarding tuberculosis transmission increased from 34.2% to 76.7%, hepatitis prevention from 38.3% to 79.2%, and dengue breeding sites from 45.0% to 85.0%. These findings show that adolescents may be familiar with the names of common infections but may not fully understand how they spread or how they can be prevented. Studies among university and health science students have also reported gaps in tuberculosis-related knowledge, indicating that misunderstandings about airborne transmission and prevention may persist even in relatively educated groups (29,30). Addressing such gaps during adolescence may therefore be valuable for improving early recognition, reducing stigma, and encouraging timely health-seeking behaviour.

Hand hygiene was a central component of the intervention and remains one of the most practical infection-prevention behaviours in community settings. Previous evidence from Pakistan showed that handwashing promotion reduced child illness in a randomized community trial, supporting the public health importance of practical hygiene education (31). Broader evidence also confirms that hand hygiene reduces infectious disease risk in community settings and lowers the risk of diarrheal disease transmission (32,33). Global reviews have further emphasized that handwashing promotion is a low-cost strategy with measurable benefits for reducing diarrheal and respiratory infections, particularly where sanitation and hygiene resources are limited (34,35). The present study adds local adolescent-focused evidence that handwashing demonstration, when integrated into a communicable disease education session, can contribute to short-term improvement in preventive practice scores.

The findings also support the need to integrate water, sanitation, and hygiene education with broader communicable disease prevention. Evidence and gap maps of WASH-related interventions show that uptake is influenced not only by education but also by access, infrastructure, and sustained behavioural support (36). School-based hygiene campaigns have also been associated with reductions in influenza-related outcomes and absenteeism, demonstrating that educational and behavioural interventions can have population-level relevance when implemented systematically (37). Similarly, systematic review evidence from developing countries supports hand hygiene interventions for reducing diarrheal and respiratory infections among schoolchildren, although intervention intensity, repetition, and environmental support affect outcomes (38). These findings indicate that adolescent education programs should not be delivered as isolated one-time messages only; rather, they should be reinforced through schools, hospitals, community health workers, and family-level communication.

The present study has practical implications for tertiary-care hospitals in South Punjab and similar settings. Hospitals are commonly viewed as places for diagnosis and treatment, but they also provide opportunities for prevention and health literacy improvement. Adolescents attending hospitals as patients, attendants, or visitors represent an accessible population that may otherwise be missed by school-based programs, especially if they are from rural or semi-urban communities or have interrupted

education. Health literacy frameworks emphasize that people need not only information but also the ability to access, understand, appraise, and apply health information in daily life (39,40). Therefore, hospital-based community health education can serve as a bridge between clinical care and household-level disease prevention.

The study has several limitations that should be considered while interpreting the findings. First, the one-group pre-test and post-test design did not include a control group, so improvements cannot be attributed exclusively to the intervention with the same certainty as a randomized or controlled study. Testing effect, short-term recall, social desirability, and Hawthorne effect may have contributed to the observed changes. Second, participants were selected through non-probability convenient sampling from a single tertiary-care hospital, which limits generalizability to all adolescents in South Punjab. Third, the follow-up period was only two weeks, so the study assessed short-term improvement rather than long-term retention or sustained behaviour change. Fourth, preventive practices were self-reported and may have been influenced by participants' desire to provide socially acceptable responses. Fifth, the questionnaire was reviewed and pre-tested, but detailed psychometric properties such as internal consistency and test–retest reliability were not reported.

Despite these limitations, the study provides useful preliminary evidence that structured, plain-language, and locally relevant health education is associated with short-term improvement in adolescents' communicable disease-related KAP scores. The intervention was feasible in a tertiary-care hospital setting, addressed multiple locally relevant infections, and combined education with pictorial material, discussion, and handwashing demonstration. Future studies should use controlled designs, larger and more representative samples, longer follow-up periods, validated KAP instruments, and objective behavioural indicators where possible. Repeated sessions delivered through hospital outreach, schools, and community health workers may further strengthen adolescent capacity to prevent communicable diseases and share accurate prevention messages within families and communities.

CONCLUSION

This study found that a structured hospital-based community health education intervention was associated with significant short-term improvement in adolescents' knowledge, attitudes, and self-reported preventive practices regarding communicable diseases. Baseline gaps were particularly evident in tuberculosis transmission, hepatitis prevention, dengue breeding sites, cough etiquette, and correct handwashing steps, while post-intervention findings showed marked improvement in overall KAP scores and selected disease-specific knowledge areas. The results suggest that adolescents can benefit from plain-language, practical, and locally contextualized education delivered through discussion, pictorial material, and demonstration. Because the study used a one-group pre-test and post-test design with short follow-up, the findings should be interpreted as short-term improvements associated with the intervention rather than definitive evidence of sustained behavioural change. Regular adolescent-focused health education sessions should be incorporated into hospital community outreach, school health programs, and public health prevention strategies in South Punjab and comparable settings.

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