

Promoting Healthy Lifestyles in Schools: An Evaluation of The Participatory Adolescent Strategy Health Action (Pasha)

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ABSTRACT

Background – Adolescence is a critical developmental stage characterized by the establishment of lifestyle habits that significantly influence lifelong health trajectories. Unhealthy practices, such as poor diet, physical inactivity, and inadequate sleep, are primary contributors to the rising burden of non-communicable diseases. The Participatory Adolescence Strategy Health Action (PASHA) program was designed to promote positive lifestyle modifications through structured, interactive health education. As outlined in the preliminary foundational document, ABSTRACT for Manu.docx, this study evaluates the effectiveness of the PASHA program on lifestyle practices among school-going adolescents in Dehradun, Uttarakhand, India.

Methods – A quantitative, quasi-experimental study was conducted using a purposive sample of 30 school-going adolescents (aged 13–17 years) in Dehradun. Data were collected using a self-structured demographic questionnaire and a validated Healthy Lifestyle Score tool (Cronbach's alpha = 0.72) assessing seven domains: physical activity, diet, stress management, environmental responsibility, substance use, preventive health, and social well-being. A pre-test was followed by the PASHA intervention, and a post-test was administered to measure changes in lifestyle practices. Data were analyzed using descriptive statistics, paired t-tests, and chi-square tests. **Results**– The mean lifestyle practice score significantly improved from \$20.27 \pm 2.33\$ in the pre-test to \$21.87 \pm 1.83\$ in the post-test, yielding a mean gain of 1.60 points (\$t = 4.22\$, \$df = 29\$, \$p < 0.001\$). The proportion of adolescents demonstrating a “High” level of healthy lifestyle practices increased from 63.3% to 96.7% post-intervention. No statistically significant associations were found between pre-test lifestyle practice scores and socio-demographic variables (\$p > 0.05\$). **Conclusion** – The PASHA program is a highly effective, participatory educational intervention for improving lifestyle practices among adolescents. Integrating such participatory health strategies into school curricula can foster sustainable, health-promoting behaviors.

KEYWORDS - Adolescent Health, Lifestyle Modification, PASHA Program, Health Promotion, School Health, Quasi-Experimental Study.

Introduction

BACKGROUND OF THE STUDY - Adolescence represents a vital phase of human development, marking the transition from childhood to adulthood. It is accompanied by rapid physical, psychological, emotional, and social changes. During this critical window, individuals acquire and solidify behavioral patterns that dictate their present well-being and establish the trajectory for their lifelong health. The World Health Organization (WHO) conceptualizes healthy living not merely as the absence of disease, but as a holistic lifestyle encompassing physical, mental, and social well-being. Maintaining healthy habits—such as consuming a balanced diet, engaging in regular physical activity, managing stress, and securing adequate sleep—can drastically reduce the risk, severity, and premature mortality associated with chronic non-communicable diseases (NCDs).

Globally, the rise in technological advancements and urbanization has paradoxically introduced significant health challenges for the youth. Today's adolescents face an environment conducive to unhealthy dietary habits (e.g., high consumption of ultra-processed foods), sedentary behaviors exacerbated by prolonged screen time, inadequate sleep hygiene, and elevated academic and social stress. In India, adolescents aged 10 to 19 years constitute approximately 22% of the population. Within this demographic, dual burdens of malnutrition and rising childhood obesity are prevalent, primarily driven by energy imbalances, sedentary routines, and a lack of health literacy.

Schools represent the most strategic setting for adolescent health interventions. Because students spend a substantial portion of their formative years in educational institutions, schools provide an ideal ecosystem for health education, behavioral modeling, and peer-supported health promotion. However, traditional didactic teaching methods often fail to translate health knowledge into sustained behavioral change. Adolescents require active engagement, autonomy in decision-making, and participatory environments to internalize health education. To bridge this gap, the Participatory Adolescence Strategy Health Action (PASHA) program was developed. PASHA is rooted in the premise that actively involving adolescents in identifying health concerns, discussing actionable solutions, and practicing healthy behaviors yields superior and more sustainable lifestyle modifications compared to passive learning. By targeting core areas such as diet, exercise, hygiene, and stress management, PASHA aims to lower the energy threshold required for adolescents to sustain healthy habits.

Objectives of the Study

1. To assess the pre-test and post-test level of practice regarding lifestyle modification among school-going children in selected schools of Dehradun, Uttarakhand.
2. To assess the effectiveness of the Participatory Adolescents' Strategic Health Action (PASHA) on practice regarding lifestyle modification among school-going children.
3. To find out the association between the pre-test level of practice regarding lifestyle modification with selected socio-demographic variables.

Theoretical Framework -

This study is anchored in ****General System Theory****, originally proposed by Ludwig von Bertalanffy (1968). General System Theory operates on the principle of "wholeness," positing that a system is a complex of interacting elements responding to inputs to produce distinct outputs.

In the context of this study, the adolescent is viewed as a dynamic system interacting with their environment. The conceptual framework defines three primary phases:

1. **Input:** The baseline status of the adolescent, encompassing their pre-existing lifestyle practices (diet, physical activity, sleep, etc.) and socio-demographic variables (age, gender, family type, income).
2. **Throughput (Intervention):** The application of the PASHA program. This structured, participatory health action serves as the transformative process designed to alter the system's current trajectory by introducing new knowledge, motivation, and coping mechanisms.
3. **Output:** The resultant change in the adolescent's behavior, measured as the post-test lifestyle practice scores. The system model directs the evaluation toward an explicit goal: determining whether the PASHA program successfully re-equilibrates the adolescent's lifestyle toward healthier practices.

Review of Literature - A comprehensive review of contemporary literature underscores the necessity of targeted health interventions for adolescents. Current research highlights the escalating prevalence of sedentary behaviors. Cunningham et al. (2026) demonstrated that adolescents in remote Indian cities average 7.3 sedentary bouts per day, totaling nearly 530 minutes. Their findings indicate that sedentary lifestyles are deeply permeating both urban and semi-urban communities, heavily driven by academic tutoring and screen time.

Baseline assessments of adolescent health behaviors often reveal a spectrum of practices. Sharma et al. (2025) and Debnath et al. (2025) evaluated adolescents in Gurugram, finding that while a majority exhibited healthy basic hygiene (71.6%) and diet (66%), areas such as sleep patterns and physical activity were largely categorized as only "moderately healthy," leaving significant room for preventive interventions.

To address these gaps, school-based interventions have proven highly efficacious. Thatshanamoorthy et al. (2026) evaluated a skills-based health education program in Puducherry using a randomized design. They found that interactive, ongoing reinforcement significantly improved healthy lifestyle knowledge compared to didactic lectures, with improvements sustained at a 3-month follow-up. Similarly, Doddihal and Patil (2026) validated a culturally sensitive, interactive module rooted in Social Cognitive Theory, highlighting that high engagement potential (Content Validity Index of 0.95) is crucial for adolescent receptivity.

Participatory and gamified approaches offer a modern vector for behavioral change. Ritika et al. (2024) specifically utilized the PASHA framework involving gamified elements (such as snakes-and-ladders) to promote diet, sleep, and hygiene modifications, recording a massive mean improvement in practice scores. Concurrently, digital participatory tools are gaining traction; Benavides et al. (2024) utilized eHealth apps and Social Network Analysis (SNA) to successfully normalize BMI percentiles among adolescents by leveraging peer group leaders. Furthermore, organized participatory activities, such as sports, have long-term developmental benefits. Kokandakar et al. (2024) linked adolescent sports participation to significantly better self-rated health and lower depression scores (PHQ-9) in early adulthood, reinforcing the holistic value of active participation.

Collectively, the literature establishes that traditional lectures are insufficient for modern adolescents. Interventions must be interactive, participatory, and integrated into the school ecosystem—principles that form the foundation of the PASHA program.

Materials and Methods - Research Approach and Design - A quantitative research approach was utilized to empirically measure behavioral changes. The study employed a Quasi-Experimental Pre-test–Post-test Design. While the initial methodological framework proposed comparative experimental and control arms, the final analytical sample for this study focused on an experimental cohort (N=30) to rigorously evaluate the pre-to-post intervention variance within a dedicated demographic.

Setting and Population - The research was conducted in selected secondary and senior secondary schools in Dehradun, Uttarakhand, India. The target population comprised school-going adolescents enrolled in the 9th and 12th standards.

Sampling Technique and Criteria - A non-probability purposive sampling technique was utilized to select N=30 participants who met the specific inclusion criteria:

Inclusion Criteria: Adolescent boys and girls studying in the 9th and 12th standards; possessing the ability to comprehend and respond to questionnaires in English or Hindi; present during the data collection period.

Exclusion Criteria: Students outside the specified academic standards; students absent due to illness or other reasons during the intervention period.

Data Collection Tools - The data was collected using a two-part instrument:

Section A: Socio-Demographic Proforma: Assessed 11 variables, including age, gender, religion, family type, parental education, monthly income, residence area, and prior health education exposure.

Section B: Healthy Lifestyle Scale (HLS): A structured, 29-item questionnaire evaluating seven domains of lifestyle modification: Physical Activity (5 items), Healthy Diet (3 items), Stress Management (6 items), Environmental Responsibility (3 items), Substance Use Avoidance (4 items), Preventive Health (5 items), and Social Well-being (3 items).

Scoring System: Dichotomous scoring was applied (Yes = 1 for health-promoting behavior; No = 0). The total score ranges from 0 to 29.

Score Interpretation: Low (0–9), Moderate (10–19), and High (20–29).

Tool Validity and Reliability - Content validity was established by a panel of experts in Child Health Nursing and Pediatrics. The reliability of the tool was tested during a pilot study conducted at Indian Public School, Vikasnagar (using 10 non-sample adolescents). Using the Cronbach's alpha split-half method, the reliability coefficient r was established at 0.72, indicating acceptable internal consistency.

The PASHA Intervention The PASHA (Participatory Adolescent Strategic Health Action) program was formulated based on literature reviews and identified adolescent needs. Moving away from standard lectures, PASHA utilized participatory modalities, including group discussions, goal-setting workshops, interactive board games, and peer interaction.

The curriculum spanned key topics:

- Importance of balanced diets and regular physical activity.
- Sleep hygiene and adequate rest.
- Personal hygiene protocols.
- Screen-time reduction strategies.
- Coping mechanisms for stress management.
- Avoidance of tobacco, alcohol, and harmful substances.

Ethical Considerations - Formal permission was procured from school administrators. Informed written consent was obtained from the participating adolescents and their guardians. Participants were assured of their right to voluntarily withdraw at any stage without academic penalty, and strict data confidentiality was maintained.

Statistical Analysis Plan - Data were analyzed using descriptive and inferential statistics. Frequencies and percentages described demographic variables. Means and standard deviations summarized the practice scores. A Paired t-test was utilized to evaluating the pre-test and post-test score differences:

RESULTS – Section A: Demographic Characteristics of the Participants - The demographic distribution of the 30 participants reveals a highly representative sample of middle-to-senior school adolescents (Table 1). The majority of the participants were 15 years old (53.3%), male (60.0%), and belonged to the Hindu religion (70.0%). Nuclear families were the most common (56.7%), with 76.7% of households comprising 4 to 5 members. Regarding parental education, the highest proportion of both fathers (43.3%) and mothers (53.3%) had completed secondary school education. The socioeconomic distribution showed that 36.7% of families earned between ₹20,000 and ₹40,000 monthly. Geographically, the sample was diverse, with the highest concentration in semi-urban (36.7%) and rural (33.3%) areas. Notably, a vast majority (83.3%) reported having prior information regarding healthy lifestyles, predominantly sourced from the internet (36.7%).

Section B: Assessment of Pre-test and Post-test levels of score regarding lifestyle practices -

Table 1: Frequency and Percentage Distribution of Score Levels of participants:

	Score Range	Pre-test		Post-test	
		f (N = 30)	%	f (N = 30)	%
Low	0-9	0	0.0%	0	0.0%

Moderate	10-19	11	36.7%	1	3.3%
High	20-29	19	63.3%	29	96.7%

Table 1 depicts that, during pre-test 19 (63.3%) students had high score level, 11 (36.7%) students had moderate level scores and NO one had low score. While, during post-test, 29 (96.7%) students achieved high level scores, only 1 (3.3%) student had moderate level score and NO one had low level score.

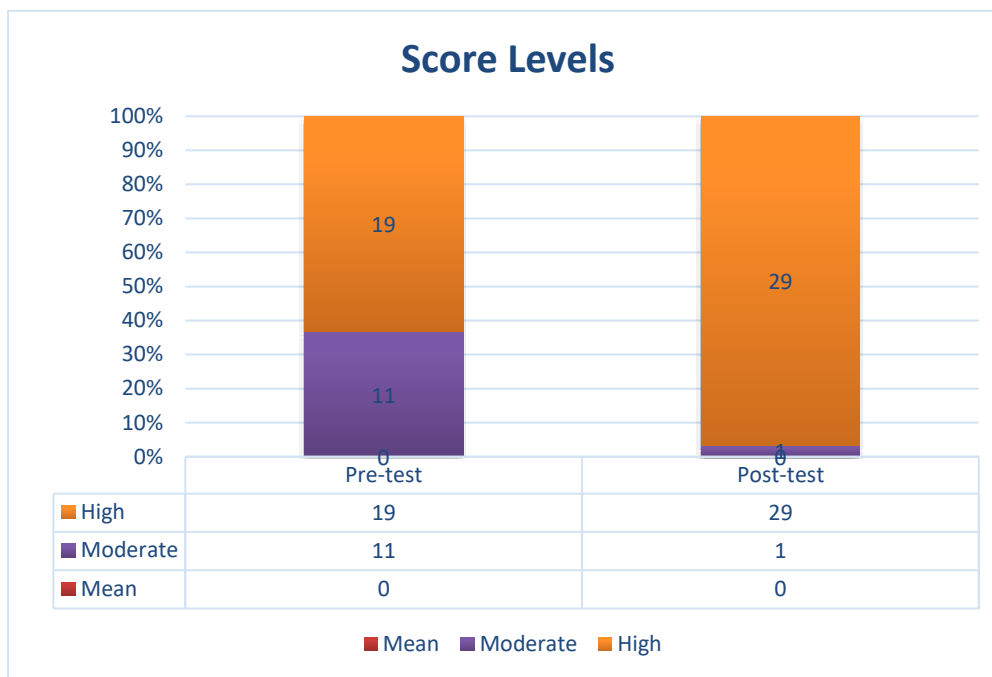


Figure 1: Distribution on Score levels of Pre-test and Post-test

Table 2: Mean, Standard Deviation, Median and Score Ranges of Pre-test and Post-test:

	Mean	Standard Deviation (SD)	Median	Minimum	Maximum
Pre-test	20.27	2.33	20.00	15	25
Post-test	21.87	1.83	22.00	15	24

Table 2 shows that the mean pre-test score was 20.17 ± 2.33 which increases to the mean post-test score of 21.87 ± 1.83 . During post-test most frequent score was 22 whiles, during pre-test this score was 20.

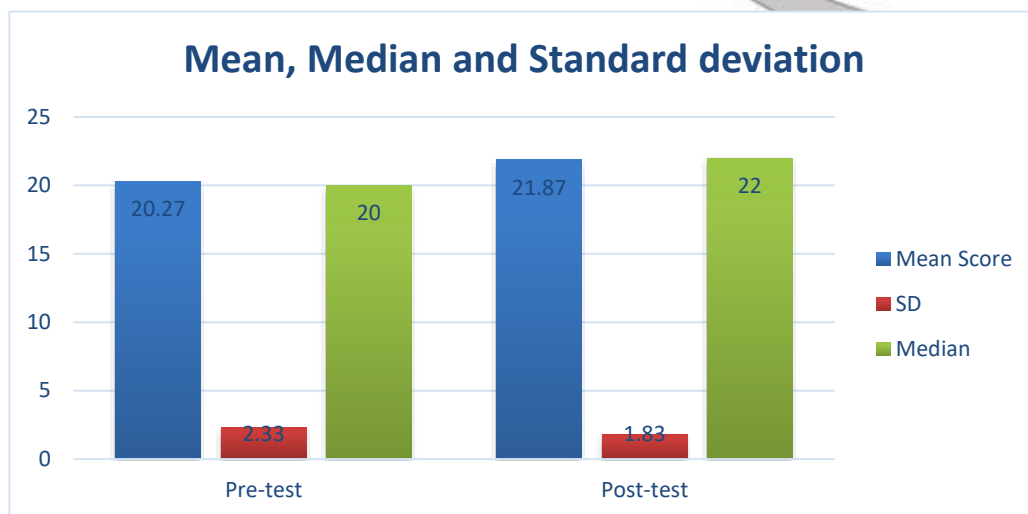


Figure 2: Mean, Median, Standard Deviation (SD) of Pre-test and Post-test

Section C: Comparison of Pre-test and Post-test Scores regarding Lifestyle Practices

Table 3: Comparison of Knowledge score of Pre-test and Post-test:

Test	N	Mean	SD	Mean Difference	T-test	df	p-value	Inference
Pre- test	30	20.27	2.33	1.60	4.22	29	<0.001	Statistically Significant (p < 0.05)
Post-test	30	21.87	1.83					

Table 3 shows that the mean post-test score was 21.87 ± 1.83 which is higher than the mean post-test score of 20.17 ± 2 with gain points of 1.60. Calculated 't-value' is 4.22 (df = 29 and p-value < 0.001), which is highly significant at the 0.05 level. Therefore, the null hypothesis H_0 is rejected and research hypothesis H_1 is accepted, proving that there is significant improvement in lifestyle practices among school-going children after the invention of the PASHA.

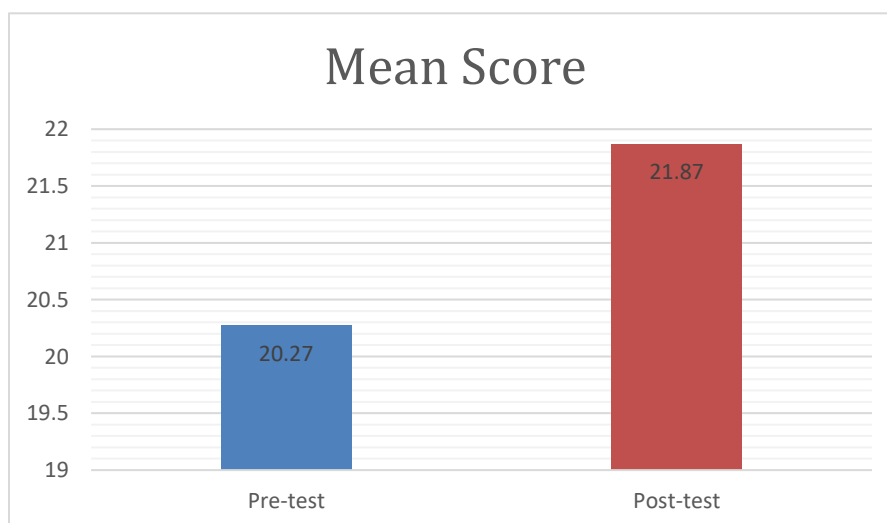


Figure 3: Mean score of Pre-test and Post-test

Section D: Association between Pre-test score levels and Demographic Variables

Table 4: Chi-Square analysis showing association between Demographic variables and Pre-test score Levels:

Demogr-aphic Variables	Sub-categories	Pre-test Score Levels		Total N (%)	Chi-Square (χ^2)	p-value	Table Value	Inference
		Moderate n (%)	High n (%)					
Age (In Years)	13 Years	1 (3.3%)	0 (0.0%)	1 (3.3%)	3.14	0.535 df = 4	7.78	Not Significant (p > 0.05)
	14 Years	1 (3.3%)	4 (13.3%)	5 (16.7%)				
	15 Years	5 (16.7%)	11 (36.7%)	16 (53.3%)				
	16 Years	3 (10.0%)	3 (10.0%)	6 (20.0%)				
	17 Years	1 (3.3%)	1 (3.3%)	2 (6.7%)				
Gender	Male	9 (3.0%)	9 (30.0%)	18 (60.0%)	3.44	0.12 df = 1	3.84	Not Significant (p > 0.05)
	Female	2 (6.7%)	10 (33.3%)	12 (40.0%)				
Religion	Hindu	8 (26.7%)	13 (43.3%)	21 (70.0%)	0.06	1.00 df = 1	3.84	Not Significant (p > 0.05)
	Muslim	3 (10.0%)	6 (20.0%)	9 (30.0%)				
Family Type	Nuclear	8 (26.7%)	9 (30.0%)	17 (56.7%)	2.00	0.368 df = 2	5.99	Not Significant (p > 0.05)
	Joint	2 (18.2%)	8 (42.1%)	10 (33.3%)				
	Extended	1 (3.3%)	2 (6.7%)	3 (10.0%)				
Number of Family Members	1-3 Members	1 (3.3%)	1 (3.3%)	2 (6.7%)	0.81	0.667 df = 2	5.99	Not Significant (p > 0.05)
	4-5 Members	9 (30.0%)	14 (46.7%)	23 (76.7%)				

	More than 6 Members	1 (3.3%)	4 (13.3%)	5 (16.7%)				
Father's Education Status	Primary School	3 (10.0%)	5 (16.7%)	6 (20.0%)	0.06	0.969 df = 2	5.99	Not Significant (p > 0.05)
	Secondary School	5 (16.7%)	8 (26.7%)	13 (43.3%)				
	Graduate and more	3 (10.0%)	6 (20.0%)	9 (30.0%)				
Mother's Education Status	NO Formal Education	1 (3.3%)	1 (3.3%)	2 (6.7%)	1.20	0.752 df = 3	7.82	Not Significant (p > 0.05)
	Primary School	4 (13.3%)	4 (13.3%)	8 (26.7%)				
	Secondary School	5 (16.7%)	11 (36.7%)	16 (53.3%)				
	Graduate and more	1 (3.3%)	3 (10.0%)	4 (13.3%)				
Monthly Family Income	Below 10000	0 (0.0%)	2 (6.7%)	2 (6.7%)	2.89	0.409 df = 3	7.82	Not Significant (p > 0.05)
	10001-20000	4 (13.3%)	3 (10.0%)	7 (23.3%)				
	20000-40000	3 (10.0%)	8 (26.7%)	11 (36.7%)				
	Above 40001	4 (13.3%)	6 (6.7%)	10 (33.3%)				
Residence Area	Urban	1 (3.3%)	2 (6.7%)	3 (10.0%)	0.09	0.993 df = 3	7.82	Not Significant (p > 0.05)
	Semi-Urban	4 (13.3%)	7 (23.3%)	11 (36.7%)				
	Rural	4 (13.3%)	6 (20.0%)	10 (33.3%)				
	Semi-Rural	2 (6.7%)	4 (13.3%)	6 (20.0%)				
Prior Information	Yes	9 (30.0%)	16 (53.3%)	25 (83.3%)	0.03	1.000 df = 1	3.84	Not Significant (p > 0.05)
	NO	2 (6.7%)	3 (10.0%)	5 (16.7%)				
Source of KNOWledge	Teacher	2 28.6%	5 71.4%	7 (23.3%)	1.90	0.593 df = 3	7.82	Not Significant

	Parents	4 (13.3%)	3 (10.0%)	7 (23.3%)				(p > 0.05)
	Internet	3 (10.0%)	8 (26.7%)	11 (36.7%)				
	NOT Applicable	2 (6.7%)	3 (10.0%)	5 (16.7%)				

Table 4 indicates that all calculated Chi-Square (χ^2) values for demographic variables were lower than the critical values at $p = 0.05$. Therefore, Null hypothesis H02 is accepted and research hypothesis H2 is rejected proving there is NO statistically significant association between the finding of pre-test levels of practice with their selected demographic variables.

DISCUSSION

Our findings demonstrate a highly significant improvement in lifestyle practice scores following the PASHA intervention ($t=4.22$, $p<0.001$). The baseline scores were already promising, with 63.3% of students exhibiting "High" level practices, likely reflecting the fact that 83.3% of the cohort reported prior exposure to health information, primarily via the internet. However, mere knowledge acquisition is rarely sufficient to drive behavioral change. The shift of the cohort to a 96.7% "High" practice level post-intervention highlights the unique efficacy of the PASHA framework.

Unlike conventional, passive didactic lectures, PASHA relies on active participation, peer-group discussions, and gamified reinforcement (e.g., interactive board games) to bridge the gap between health literacy and health action. This aligns closely with the findings of Thatshanamoorthy et al. (2026), who demonstrated that skills-based, interactive programs significantly outperformed traditional lectures in Indian cohorts. By engaging adolescents in setting their own health goals and evaluating their daily routines (sleep, hygiene, physical activity), PASHA successfully lowers the psychological resistance to adopting new routines. This participatory nature empowers adolescents, turning them from passive recipients of health advice into active stakeholders in their well-being, mirroring the successful outcomes seen in the interactive modules validated by Doddihai & Patil (2026) and Ritika et al. (2024).

Influence of Socio-Demographic Variables - An intriguing finding of this study is the lack of a statistically significant association between any socio-demographic variables (including gender, socioeconomic status, and parental education) and the baseline lifestyle practices of the adolescents ($p > 0.05$ across all variables).

This homogeneity suggests that in this specific educational and geographical setting (Dehradun schools), the macro-environment of the school and overarching generational trends (such as ubiquitous internet access and generalized academic pressures) may exert a stronger, more uniform influence on adolescent behavior than individual household micro-environments. For instance, the pervasive nature of digital media and sedentary screen time cuts across socioeconomic strata, corroborating the findings of Cunningham et al. (2026), who noted that sedentary lifestyles are now deeply entrenched even in remote and semi-urban Indian communities regardless of demographics.

However, this lack of association must be interpreted cautiously. The relatively small sample size ($N=30$) may lack the statistical power necessary to detect nuanced demographic variances. A larger, multi-center cohort might reveal subtle stratifications in how income or parental education influences specific sub-domains like diet quality or access to organized sports.

IMPLICATIONS OF THE STUDY

The robust outcomes of the PASHA intervention yield critical implications across multiple domains of public health and nursing:

Implications for Nursing and Public Health - Practice School health nurses and public health practitioners must pivot away from standard lecture formats toward participatory, skills-based training. The PASHA program provides a ready-to-implement blueprint for integrating active health education covering diet, physical activity, and stress management into standard school curricula. By conducting regular, interactive lifestyle assessments, nurses can identify at-risk adolescents early and utilize peer-group dynamics to foster positive behavioral reinforcement.

Implications for Educational Administration - School administrators play a pivotal role in shaping the physical and temporal environment of adolescents. The success of PASHA indicates that schools should allocate dedicated time and resources for participatory health programs. Collaboration between school boards, parents, and healthcare professionals is essential to create an ecosystem that supports these educational initiatives (e.g., providing healthier cafeteria options and mandatory physical recreation periods).

Implications for Nursing Education - Nursing curricula must emphasize adolescent psychology and modern health promotion

techniques. Nursing students should be trained in developing and facilitating participatory, age-appropriate educational modules like PASHA. Understanding how to utilize gamification, peer leadership, and interactive goal-setting is a vital competency for modern community health nursing.

Implications for Future Research - This study establishes a strong baseline, but further research is imperative. Future studies should:

1. Replicate the PASHA intervention across larger, multi-centric samples to enhance generalizability.
2. Utilize a randomized controlled trial (RCT) design with strict control and experimental arms to definitively isolate the intervention's effect.
3. Conduct longitudinal follow-ups (e.g., 6 months, 1 year) to assess the long-term sustainability of the observed lifestyle modifications.
4. Analyze the differential impact of individual PASHA sub-components (e.g., physical activity vs. stress management modules) to optimize the intervention's efficiency.

LIMITATIONS - While the findings are statistically robust, several limitations must be acknowledged:

- The study was conducted with a relatively small sample size (N=30), limiting the statistical power to detect demographic associations and broad generalizability.
- The research was restricted to selected schools in Dehradun, Uttarakhand. Cultural, infrastructural, and environmental variances in other regions may yield different baseline practices and intervention responses.
- The assessment relied on a self-structured questionnaire. Adolescents may exhibit social desirability bias, over-reporting health-promoting behaviors, though the assurance of anonymity aimed to mitigate this.
- The study evaluated immediate post-intervention changes; it did not assess whether these newly acquired habits were sustained over a longer temporal horizon.

CONCLUSION - Adolescence is the crucible in which lifelong health behaviors are forged. The rising tide of sedentary lifestyles and non-communicable diseases necessitates proactive, engaging interventions. This study conclusively demonstrates that the Participatory Adolescence Strategy Health Action (PASHA) program is highly effective in improving the lifestyle practices of school-going adolescents. By transitioning from passive information delivery to active, peer-involved, and structured participation, PASHA enables adolescents to internalize and enact healthy choices regarding their diet, physical activity, sleep, and psychological well-being. Incorporating such dynamic, participatory educational strategies into the standard school ecosystem is a vital and actionable step toward safeguarding the health of the next generation.

DECLARATIONS - We hereby declare that the research project entitled "Promoting Healthy Lifestyles in Schools: An Evaluation of The Participatory Adolescent Strategy Health Action (PASHA)" is an original work done by us.

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Conflict of Interest - Authors declares no any conflict of interest.

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