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Domain-specific Biosafety Knowledge, Attitude and Practices among Senior Secondary Students: Hygiene, Food Safety, Infection Control and Environmental Health

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ABSTRACT Biosafety preventive health behaviours related to hygiene, water, food safety, infection control, and environmental health are crucial for public health resilience. A cross-sectional Knowledge-Attitude-Practice (KAP) survey was carried out among 840 senior secondary students in Dehradun district in India, using a validated questionnaire, to assess the domain-wise performance. Data were analysed in Python 3.13.9 using descriptive and inferential statistics. Students possessed overall moderate knowledge (14.03 ± 3.42), high attitude (54.26 ± 6.28) and favourable practice (84.18 ± 11.91). Science students, females, and urban students scored significantly better ($p < 0.001$). Correlation between knowledge-attitude was stronger than knowledge-practice across domains. Regression analyses and Random Forest model indicated that attitude consistently and strongly predicted bio-safety practices, whereas knowledge predicted only selected domains. School biosafety education should aim at risk perception, personal responsibility and sustained behaviour engagement besides knowledge to improve school students' health resilience.