

Literature Review

Received 27 May 2026

Revised 25 July 2026

Accepted 02 August 2026

Natural Resources for Human
Health 2026, Vol. 6 (14s): 1026–1035

KEYWORDS:

Adolescents; Children; Health risk
behaviors; Health promotion;
School health; Saudi Arabia

Children's and Adolescents' Health Risk Behaviors in Saudi Arabia: A Narrative Literature Review

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ABSTRACT: Background: Childhood and adolescence are important periods for establishing health behaviors and preventing illness and injury. This review examines health risk behaviors among children and adolescents in Saudi Arabia and their implications for school health, policy and research.

Methods: This narrative review draws on literature published mainly during 2015–2025, identified through PubMed, Google and official health organization websites. Findings were summarized by health topic to provide an overall picture of the evidence.

Findings: The literature describes unhealthy dietary habits, insufficient physical activity, tobacco use, gaps in sexual health knowledge and poor oral health practices. Unsafe driving, violence and school safety also require attention. Family practices, peer relationships and school environments are relevant across these areas. Research on school health systems and programs remains limited.

Conclusion: School health should connect education, supportive environments and access to care. The Whole School, Whole Community, Whole Child framework offers a practical basis for this approach. Priorities include healthier food, opportunities for activity, trained staff, safe schools and clear referral pathways. Routine monitoring and evaluation should guide implementation.

INTRODUCTION

Childhood and adolescence are important periods for establishing health behaviors that may continue into adult life. The World Health Organization (WHO) defines adolescence as the period from 10 to 19 years. Growth during these years involves physical, emotional and social changes, alongside increasing independence in health decisions. Children and adolescents still depend on adults for care, guidance and access to services. Their health is therefore shaped by family practices, peer relationships, education and the wider environment. [1, 2]

Saudi Arabia has made substantial investments in health services, but the burden of noncommunicable disease makes prevention an important national priority. WHO's country cooperation brief identifies this wider public health challenge. [3] Excess weight is one concern beginning early in life. A population-based retrospective study of 351,195 children and adolescents aged 2–19 years reported overweight and obesity prevalences of 11.2% and 9.4%, respectively. These findings support early attention to nutrition and physical activity. [4]

Understanding health risk behaviors can guide prevention before illness or injury occurs. This review considers early feeding, dietary practices, physical inactivity, sedentary behavior, tobacco and other substance use, sexual health, oral health and injuries in Saudi Arabia. It also examines the role of schools, families and health services. The aim is to provide an overall picture of these concerns and identify practical priorities for school health. Earlier relevant literature is retained to provide context for publications from 2015–2025.

DIETARY PRACTICES AMONG CHILDREN AND ADOLESCENTS IN SAUDI ARABIA

Dietary habits develop within the family and change as children gain greater independence. Food availability, parental routines and social influences can affect these habits. Darwish et al. described concerns involving diet and lifestyle from the preschool years. This evidence supports beginning nutrition advice early and considering the home environment alongside the child's food choices. [5]

Breastfeeding and complementary feeding form part of this early foundation. WHO recommends exclusive breastfeeding for the first six months, followed by appropriate complementary foods and continued breastfeeding up to two years or beyond. Complementary foods should meet changing nutritional needs as the child grows. [6] Saudi evidence identifies gaps between recommended feeding practices and actual practice. Alshammari and Haridi reported gaps in knowledge and adherence to recommended breastfeeding practices, while the earlier review by Al Juaid et al. described substantial variation in breastfeeding measures and estimates. Consistent definitions would make future estimates easier to compare. [7, 8] Workplace conditions can also affect breastfeeding. AlSedra and AlQurashi described difficulties in continuing breastfeeding after returning to work. Practical support includes time to express milk, suitable facilities and understanding from employers and families. Support for breastfeeding should therefore address working conditions as well as mothers' information needs. [9]

As children grow, diet quality and meal patterns become important concerns. Alsubaie reported low intake of fruit, vegetables and milk products. Alasqah et al. also described unhealthy dietary patterns, including concerns about regular meals and food choices. These findings support efforts to improve access to varied foods and strengthen daily eating routines. [10, 11]

Fast food, sweet snacks and sugary drinks are further concerns. Amer et al. linked food choices with taste, social activities and eating with friends. This provides useful context for the food environment in which adolescents make decisions. [12] Almughamisi et al. identified school food provision, health education and coordination between relevant organizations as actionable priorities for adolescent obesity prevention. Their work supports involving students and those responsible for school food in planning changes. [13]

Associations between particular foods and obesity require careful interpretation. Musaiger et al. reported higher odds of obesity with consumption of chocolates and sweets or fast food more than three times per week. The corresponding odds ratios were 1.57 and 1.35. These associations identify dietary concerns but do not establish causation. [14] Al-Hazzaa et al. examined diet and activity together in relation to excess weight, showing why prevention should consider several behaviors rather than one food item alone. [15]

Sweet foods, carbonated beverages and energy drinks are also consumed during the primary school years. Alsubaie's findings identify these products as relevant targets for nutrition education and school food policies. [16] However, providing information does not ensure that healthier options are available or affordable. Alsubaie's assessment of nutrition education identified weaknesses in its delivery and called for a more organized approach. A named coordinator, suitable teaching materials and consistent messages from staff could help improve implementation. [17]

School nutrition programs should connect lessons with everyday practice. Proposed actions include reviewing canteen food, providing drinking water and involving families in supporting regular meals. Students can help identify acceptable healthier choices. Monitoring should examine what schools provide and what students choose, rather than relying on body mass index

alone. These proposals reflect the emphasis on school environments and coordinated prevention in the Saudi literature. Evaluation should assess whether they improve dietary practices. [13, 17]

SEDENTARY LIFESTYLE AND PHYSICAL INACTIVITY

Physical inactivity is a recurring concern in the Saudi literature. A systematic review by Alasqah et al. found low activity levels alongside unhealthy dietary habits. Differences in definitions and measures limit direct comparisons, but the overall findings support sustained attention to physical activity during adolescence. [18] Earlier work by Al-Hazzaa et al. also documented low activity and substantial time spent in sedentary pursuits. These behaviors are relevant to prevention because opportunities for movement depend partly on daily routines and access to suitable spaces. [19]

Alsubaie and Omer identified limited facilities and social support among the barriers to activity. Their findings support providing accessible recreational opportunities and making activities enjoyable. Schools can contribute through regular physical education, active breaks and opportunities for participation beyond competitive sport. Activities should accommodate different interests and abilities. Improving facilities may help, but encouragement from teachers, friends and families also deserves attention. [20]

Maintaining activity as young people move towards adulthood is another concern. Alkhateeb et al. described changes in exercise practice across the transition to higher education. [21] Samarkandi reported prolonged sitting alongside participation in physical activity. [22] These findings support attention to both activity and sedentary behavior beyond school. Early prevention should help young people develop routines that remain practical when study and work demands change.

Sedentary behavior should be considered alongside physical activity. Al-Hazzaa and Albawardi examined screen time, activity and dietary habits, and later work revisited these concerns over a ten-year period. The findings indicate that screen use and low activity remain relevant to adolescent health. Schools and families can encourage breaks from prolonged sitting while protecting time for active recreation. [23, 24]

Family routines may reinforce these efforts. Garriguet et al. reported associations between parent and child activity and sedentary behavior. This international evidence supports considering family routines when planning activity programs. [25] Alsubaie also found an association between physical activity, self-rated health and life satisfaction. The direction of this relationship cannot be established from that finding alone. Programs should also consider wellbeing and students' experiences of participation. [26]

SUBSTANCE ABUSE

Tobacco and other substance use are important prevention concerns. Al-Jerani et al. reviewed evidence on several substances and noted limitations in reporting. Jiang et al. examined social influences and the difficulties surrounding disclosure of illicit drug use. Reliable national estimates of adolescent illicit drug use remain difficult to establish from this literature. Interpretation depends on the substance measured and how use was defined. [27, 28]

Smoking is the clearest concern in the adolescent evidence reviewed here. Alasqah et al. reported smoking estimates ranging from 2.4% to 39.6%. The variation limits the use of a single estimate to describe smoking nationally. Smoking by friends and family members, academic difficulties and other social factors were among the reported correlates. Prevention should therefore address social influences as well as knowledge of tobacco-related harm. School policies should be reinforced by consistent messages from adults. [29]

Family and peer relationships are also relevant to other substances. Mahfouz et al. linked khat chewing with use by family members and friends. Beaver et al. found that delinquent peer behavior was the strongest and most consistent predictor of substance use. Low self-control did not show the expected association. These findings support early attention to peer pressure, family communication and access to help. Family circumstances should be considered without blaming young people or their relatives. [30, 31]

Historical evidence provides further context. Alkhalaf et al. reported changes in patterns of substance addiction over time. Bassiony's review described several substances, associated health problems and gaps in the evidence. These accounts help explain service needs, but they cannot establish the current prevalence of drug use among schoolchildren. Regular monitoring is needed to distinguish experimentation, repeated use and substance use disorders. Clear definitions would improve comparisons and help identify service needs. [32, 33]

Media exposure is another possible influence. AlSayyari and AlBuhairan reported associations between media exposure and adolescent substance use. This supports examining the messages young people encounter, while avoiding the assumption that exposure alone causes use. [34] Broader Saudi evidence also identifies family conflict, substance use by close contacts and adverse experiences as relevant concerns. Khalawi et al. contribute to this wider understanding of social vulnerability. Such evidence supports sensitive prevention and referral, without assuming that the same risks apply equally to every adolescent. [35]

Misconceptions about drugs may persist into early adulthood. Syed et al. examined attitudes towards illicit substances and highlighted the need for accurate education. [36] Almarhabi et al. reported an association between earlier substance use and driving under the influence before adjustment, but it was not statistically significant after adjustment. The reported driving behavior still highlights a concern for injury prevention. [37] Schools should offer clear information, practical skills for handling peer pressure and routes to professional support. Referral procedures should protect privacy while meeting safeguarding responsibilities. These actions should be supported by families and health services rather than left to classroom teaching alone.

SEXUAL BEHAVIOURS

Sexual health is a sensitive but necessary part of adolescent health. Alsubaie reported that 38% of respondents had experienced some form of sexual contact and identified limited communication with parents. This measure covered sexual contact broadly and did not estimate unprotected intercourse or sexually transmitted infection. The same work showed support for sexual health education. It therefore points to unmet information needs and the importance of respectful communication about development, relationships and prevention. [38]

Knowledge of HIV and other sexually transmitted infections also requires attention. Alsubaie reported poor knowledge in 64.3% of respondents, alongside reliance on friends and the internet for information. However, knowledge scores were not significantly associated with reported sexual behaviors or attitudes in that study. Knowledge and behavior therefore require separate assessment. Education should address misconceptions while recognizing that behavior also depends on relationships, circumstances and access to advice. [39]

Wider Saudi evidence helps explain these communication difficulties. Alomair et al. described limited sexual and reproductive health knowledge, discomfort discussing sexual matters and barriers to obtaining suitable information and care. Their related work identified barriers within families, schools and health services that restricted access to information and care. [40, 41]

Earlier adolescent research by Alquaiz et al. identified gaps in sexual health knowledge and the resources available for education. This remains relevant background for improving communication within families and schools. [42] Age-appropriate teaching should provide clear information about development, infection prevention and when to seek professional advice. Parents and teachers may need suitable resources to respond to questions without embarrassment or judgment. The content should be culturally appropriate while remaining medically accurate.

Sexual health and substance-related harm can overlap. Fageeh et al. documented infections and limited awareness in the context of substance use. This supports coordinated prevention and clinical referral where risks coexist, but does not establish infection rates among adolescents generally. [43] Aleissa's earlier work also described links between smoking and other reported health risk behaviors, including sexual behavior. [44] Raheel et al. identified gaps in knowledge about infection prevention and called for further education and research. Together, these findings support accessible advice rather than broad assumptions about sexual practices. [45]

ORAL HEALTH BEHAVIOR

Oral health deserves attention alongside diet and other health behaviors. Nurelhuda et al. described the burden of dental caries across the Arab region. Siddiqui et al. discussed dental caries, periodontal disease and prevention in Saudi Arabia. These accounts identify oral disease as an important public health concern. They also support linking prevention with daily hygiene, food choices and access to dental care. The regional findings provide context for interpreting the Saudi evidence. [46, 47]

Al Subait et al. reported gaps in oral health knowledge and preventive behavior. Their findings support practical education and closer links between knowledge and daily routines. [48] Alsubaie's work on oral health-related behaviors and dental pain identified irregular preventive practices and an association between carbonated drinks and toothache. The findings reinforce the need to address oral hygiene and dietary habits together. Dental pain also requires assessment and care; education alone cannot meet the needs of children who already have symptoms. [49]

Earlier work by Togoo et al. found that once-daily brushing was more common than twice-daily brushing. Use of miswak was also reported. Cultural practices and cleaning technique need to be considered when giving advice. Knowledge about oral health did not always translate into regular preventive practice. Family guidance and practical demonstrations may help support daily routines. [50]

Schools could include oral health within routine health education, encourage healthier snacks and establish clear dental referral routes. Families should receive consistent advice, particularly when a child reports pain or repeatedly misses dental appointments. Monitoring can assess delivery of oral health lessons, completion of referrals and changes in dental symptoms. Evaluation should assess who receives these services and whether oral health improves. [47, 48, 49]

PHYSICAL INJURIES

Injuries are a major concern for child and adolescent health. Albedewi et al. identified road traffic injuries, falls, burns and other causes in the Saudi literature, together with gaps in available injury information. Prevention needs to account for changing risks as children become more independent. [51] The Global Burden of Disease analysis documented substantial premature mortality and loss of healthy life from transport and other unintentional injuries. [52] Alkhamis and Abdulkader reported unintentional childhood injuries and identified the home as an important location. Gad et al. also documented patterns of injury and associated factors. These findings support caregiver education, safer surroundings and attention to hazards during play and daily activities. Better reporting would help identify recurring hazards and guide prevention. [53, 54]

Road safety becomes increasingly important during adolescence. Alsubaie described driving without a license, low seat-belt use and involvement in car drifting. Several risk behaviors occurred together. These findings support combining road safety education with broader prevention efforts, including substance use prevention. [55] Reports of driving under the influence further support joint attention to substance use and road safety. [37]

Violence and bullying also require attention. AlBuhairan et al. found that bullying and physical violence were associated with more frequent symptoms of depression and anxiety. Physical violence was also associated with poorer academic performance. [56] Prevention should include clear reporting routes, timely support and follow-up after an incident. Students need to know where to seek help and how their concerns will be handled. Monitoring should assess the response to reported concerns, alongside the number of incidents. An increase in reporting may indicate better access to help rather than a simple increase in violence.

School environments also require attention in childhood injury prevention. In a 2017 review of school safety in Saudi Arabia, Alsubaie described concerns about the suitability of rented school buildings, limited emergency training for staff and students, and insufficient access to trained health and safety personnel. The review also noted the absence of a national system for recording school accidents and emergencies at that time. It called for better safety monitoring and training in the assessment and management of emergencies, including head injuries, suffocation and fires. [57]

The review emphasized coordination between education and health authorities, families and local organizations to improve school safety. These recommendations extend injury prevention beyond individual behavior to school buildings and readiness to respond to emergencies. Current assessments are needed to determine which gaps remain. Schools should have clear emergency responsibilities, regular drills and a reliable process for recording incidents and reviewing the response. [57]

Health concerns may occur together rather than as isolated behaviors. Alsubaie's review described unhealthy diet, insufficient activity, tobacco use, violence and mental health concerns. It identified evidence gaps in mental health, sexual health and substance use, and called for regular national monitoring and stronger school health services. Cooperation between schools, families and health professionals was recommended. [58]

SCHOOL HEALTH PRIORITIES USING THE WSCC FRAMEWORK

The Whole School, Whole Community, Whole Child (WSCC) framework provides a useful basis for organizing these priorities. Developed by the Centers for Disease Control and Prevention (CDC) and ASCD, it connects school health with learning and places the child at the centre. Its ten components bring together teaching, services, school environments, staff wellbeing, families and community partners. Figure 1 presents a simplified schematic of the framework. [59, 60]

For Saudi schools, initial priorities could include healthier food provision, daily opportunities for activity, prevention education and dental services. Safe buildings, emergency readiness and support for students experiencing violence should be part of routine practice.



Figure 1. Simplified Schematic of Whole School, Whole Community, Whole Child framework. [59, 60]

CONCLUSION

Protecting children's and adolescents' health is a public health responsibility with implications for learning, wellbeing and health throughout life. This review identifies concerns across diet, physical activity, substance use, sexual and oral health, and injury prevention in Saudi Arabia. Prevention should begin early and respond to the different needs of children and adolescents. Schools should be central to this response, with support from families, primary care and the wider community. The WSCC framework offers a practical basis for coordinating school health.

Policy should give school health clear responsibilities, adequate resources and measurable objectives. Health and education authorities should jointly monitor delivery and access to services. Safe buildings, trained staff, emergency plans and injury reporting should form part of routine school practice. Research should provide representative national data using consistent measures across age groups, sexes and regions.

Author contributions

Ali Saad R. Alsubaie was responsible for the study conception, document review, data extraction, interpretation, manuscript drafting, and final approval.

Funding

No funding was received for this study.

AI Disclosure

The author used ChatGPT (OpenAI) to assist with language editing and preparation of Figure 1 from the cited CDC sources. The author reviewed and revised the content and takes full responsibility for the manuscript.

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